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SAMEER P. NARKHEDÉ

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Association of Indian Universities



Shastri Indo-Canadian Institute

Fellowships for Canada, 1999-2000

- I.** The Shastri Indo-Canadian Institute, with funding from the Canadian International Development Agency, invites applications from established Indian Scholars in the area of development and the environment, social and economic reform, private-sector development, and gender and development; for the following fellowships :
- a. **Development Studies**
Duration : four months between 1 September 1999 and 30 April 2000
 - b. **Women and Development**
 - i) Faculty Research Fellowships
Duration : four months between 1 September 1999 and 30 April 2000
 - ii) Doctoral Research Fellowships
Duration : upto eight months between 1 September 1999 and 30 April 2000
 - iii) Pilot Project Awards
Duration : upto two months between 1 September 1999 and 30 April 2000
 - iv) Visiting Lectureships
Duration : three-week lecture tour in Canada between 1 September 1999 and March 2000.
 - c. **Media Fellowships** : For mid-level journalists in print and electronic media
Duration : four months between 1 September 1999 and 30 April 2000

Since these awards are a part of the Institute's Development Studies Programme, work to be carried out during the tenure of the fellowships must have a clear developmental significance.

General Eligibility : Candidates must be

- i) citizens or permanent residents of India,
- ii) have a clear and focused plan of work which can reasonably be implemented during the tenure of the fellowship, and
- iii) be prepared to leave for Canada no later than 1 January 2000 if selected

Value :

- i) excursion rate return air ticket between India and Canada.
- ii) \$ 500 for books and personal effects for Development Studies and Women and Development and \$ 1000 for Media fellowships
- iii) a living and accommodation allowance

II. The Government of Canada, through the Shastri Indo-Canadian Institute, invites applications from Indian scholars in the following three categories :

- a. Canadian Studies Faculty Research
- b. Canadian Studies Faculty Enrichment
- c. Canadian Studies Doctoral Research

Eligibility

Applicants in all categories must be citizens or permanent residents of India and proficient in either English or French. Repeat applications for faculty awards will not be considered until the objectives of the earlier award have been demonstrably achieved.

- a. Faculty Research/Faculty Enrichment
- b. Faculty Enrichment

These awards are intended to fund a visit to Canada of four or five weeks' duration to work on projects identified by the applicants. The projects should lead to the publication of scholarly articles in India in the case of research awards and the development of courses on Canada in Indian Universities in the case of enrichment awards. Preference will be given to projects which focus on topics in the social sciences and the humanities which must lend themselves to enhancing the understanding of Canada, or of the Canada-Indian relationship, in India.

Applicants will normally be full-time members of the academic staff of a recognized institution of higher education or an equivalent degree-granting organization in India. Faculty Research applicants may also be scholars at research and policy institutes in India or professors emeritus. Applicants should hold a degree equivalent to postgraduate qualification. Applications will be considered from those without these formal qualifications only if successful research and teaching experience can be demonstrated. Applicants able to provide evidence of their interest in or involvement with Canada prior to the application will be preferred. This may be demonstrated by courses already given, research undertaken, extra-mural activities, active membership in relevant organizations, etc.

Please note that all successful applicants in both faculty categories will be required to attend a Canadian Studies summer-institute-cum-orientation session for five to seven days in May or June 1999 at a location in Canada to be announced. The remainder of the award period will be spent working on the projects proposed in the applications.

- c. Doctoral Research (Canadian Studies Graduate Awards)

These awards are intended to fund research in Canada for a period of upto ten months on the applicants' doctoral dissertation. Preference will be given to applicants whose dissertations focus on topics in the social sciences and the humanities, which are most likely to advance understanding of Canada in India. Applicants must be enrolled as doctoral candidates in a recognized institution of higher education or equivalent degree-granting organization and must expect to have completed non-thesis requirements of the Ph.D. by the time the tenure of the award commences.

Please write for the application forms and detailed guidelines by sending a self-addressed Rs 15/- stamped envelope(s) (size 26 cms x 30 cms) superscribing the name of fellowship to

Shastri Indo-Canadian Institute
5, Bhul Vir Singh Marg
New Delhi-110 001.

Please send a separate stamped envelope for each fellowship application.

Deadline for request of application forms : September 30, 1998 by post and October 5, 1998 in person.

Deadline for receipt of completed applications : October 16, 1998. (5.00 p.m.)

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Editor :
SUTINDER SINGH

Education and Technology

Sameer P. Narkhede*

Introduction

Educational technology dates back to the 1940s and can, arguably, be said to have come of age with the behavioural methods of Pavlov and Skinner. However, the initial euphoria with conditioned learning did not last long as the methods were found effective under only certain conditions, particularly in the area of repetitive tasks.

Serious usage of educational technology gained momentum once again in the 1960s with the development of Programmed Learning and was at its peak of popularity in the mid 1970s. As was to happen many more times in the future, Programmed Learning (PL) was portrayed as the ultimate automatic teaching tool. However, despite great expectations (for example, Glaser, 1965; Flanger et al, 1975; Talmage, 1975) and considerable investments, the Programmed Learning techniques developed in 1960s and 1970s have generally failed to show any achievement benefits. Taking into account a few exceptions, reviewers have concluded that these Programmed Instruction methods have not lived up to expectations (Miller 1976 : Schoen, 1976; Bangert et al, 1983). Programmed Learning was delegated to being a remedial tool to supplement the process of traditional education.

Computer Assisted Instruction (CAI) became the buzzword of the 1970s and, with the development of the Personal Computer in the early 80s, threatened to become the teaching machine of the future. It is fortunate that most schools could not afford computers in those days. They would have lost a lot of money. The PC in the 1980s was an expensive replacement for the piece of cardboard used by students to sequentially uncover printed programmed learning material. The PC became an electronic page turning device and was maligned by the educators of those days. Finally, it had been grudgingly accepted as a tutorial drill-and practice machine. A great number of computer versus traditional classroom instruction comparison studies have been done in the last decade. Many reviews and meta-analysis on the subject have recently appeared. Niemiec and Walberg (1987) synthesised the results of three reviews and thirteen meta-analysis of CAI from kindergarten through college. They concluded that CAI raised student achievement in examinations from the 50th to the 60th percentile, meaning that on average students in the CAI section scored a full letter grade better than did the control group.

Computer based instructional strategies have, naturally, followed the evolutionary pattern of educational theory. CAI of the 1970 to 1980 period are text based and follow a behavioural model. Drill-and practice is always the key strategy. The Computer based technologies (CBTs) of the 1980 to 1990 period used graphics based systems to produce the first of the naturalist model software. Since the advent of multimedia in the early 1990s, hyperlinked material that allows controlled interweaving of pictures, sounds, video and animation has resulted in games and other material that is ideal for Free Progress Education. Of particular importance are games and simulations that enhance learning. Citing the research by Weibe and Martin (1994) on the impact of a compu-

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ter based adventure game on achievement and attitudes in Geography it is found that "non-computer classroom games and activities can be just as beneficial as computer-based adventure games for reinforcing geography facts and student attitude". However, the implications of organising and managing games in the classroom vis-a-vis through a computer is beyond question. Often called "edutainment", this development is the heart of the paradigm shift. The ability of the Free Progress method to piggy-back on the entertainment medium is what will change learning strategies completely in the future.

The personal computer is probably the highest impact technology for education at this time. The stand-alone, multimedia PC equipped with a CD-ROM drive is today capable of imparting high quality interactive education in both skill and concept areas to all types of students including the handicapped as well as very young children. An enormous amount of software already exists for such purposes and the field is limited by imagination alone. As the PC acquires more intelligence (driven by business, the military and entertainment needs), its ability for intelligent tutoring will increase rapidly. By the year 2000, the PC is likely to take on the role of a trusted friend and advisor for most homes.

PC networks are powerful disseminators of information. The Internet, a global network of millions of computers, is one of the most impactful technologies ever produced. As network bandwidths increase, it will become common to have video and other media over networks, thereby challenging conventional analog media such as cable TV and video tapes. The phenomenon of the Internet is yet to be understood. Its use as an educational device is currently in its infancy. However, multimedia material over the Internet has the potential to embrace all the technologies discussed in this paper. One of us has been involved with the development of a Net Varsity (Minwalla 1995), a cyberspace equivalent of an Open University on the World Wide Web. Such virtual environments will become common in the future. However, their development and efficacy will be dependent on new paradigms of Instructional Design, particularly addressing heterogeneous entry profiles and diverse learning styles.

Multimedia consists of the integration of digital audio, video, graphics, animation and text on computers. Interactive multimedia has come of age with the advent of the CD-ROM, a high capacity, inexpen-

sive and sturdy storage medium. The effect on children has already been dramatic and the medium will continue to impact children and adult learners significantly in both skill and concept education. Recent developments in Multimedia will result in adaptive computing systems. The resultant intelligent tutoring systems are likely to cause a major impact on distance education.

Technology and the Learner

The use of media comparisons in determining the instructional effectiveness of various media is a subject of contention and many points have been argued repeatedly. According to Koumi (1994)

"Research on comparative efficacy of media has been flawed, giving a false impression of equipotentiality between media. Consequently, the need for workable criteria for optimal media deployment has been underestimated."

However, he states that,

"there are in fact, significant pedagogic reasons for choosing one medium over other... Each medium has its distinctive presentational attributes. Its own strengths and its weaknesses... These distinctions must be fully exploited by choosing different treatments of the topic for different media which may address different teaching functions and perhaps even by choosing different topics.

Computer as an Instructional Tool

The computer, with well-designed software, has several strengths that make it an effective instructional tool. But, it would be worthwhile looking at its benefits and limitations before launching headlong into computer-led instructional activity.

Table 1. Strengths and Weaknesses of Computers

Strengths	Weaknesses
Perform at high speed	Cannot respond spontaneously
Perform accurately	Cannot teach large groups effectively
Collect and manage information	Cannot teach/model certain behaviours
Motivate students to perform	
Perform repetitive tasks without boredom	
Maintain composure	
Individualise cost effectively	

Both teachers and computers complement each other. However, wisdom lies in the heuristics to be followed to capitalise on the strengths (and, of course, minimise on the limitations) of teachers and comput-

Table 2. Roles of Computers and Teachers in Teaching

Task	Teacher	Computer
Development	Planning, Evaluating and locating material, Developing Additional material	
Administrative	Administration, Monitoring student progress, Liaison with parents, etc.	Administration, Monitoring student progress, Liaison with parents, etc.
		Evaluating final student performance, Evaluating success of courses.
Environmental/ Affective	Modelling behaviour, Bonding, Counselling, Motivating, Safety, Discipline	Motivating
Instructional	Presenting instruction to groups/individuals, Cost benefit for groups/ individuals, Spontaneity, Adapting to individual needs, Flexibility, Synthesizing	Presenting instruction to individuals, Cost efficiency for individuals, Adapting to individual needs

ers. Table 2 gives the respective roles of teachers and computers in teaching.

Psychological Foundations

Three principles from Behavioural Learning Theory that have guided instructional design are

1. The response should follow the stimulus without delay (*Contiguity*)
2. Practice strengthens learning and improves retention (*Repetition*)
3. Knowledge concerning the correctness of the response contributes to learning (*Feedback and Reinforcement*).

A fourth, *Prompting and Fading* is also helpful. According to this principle, learning may be achieved by leading the student to the correct response under decreasingly cued conditions. However, Behavioural Theory is restricted to external observable behaviour.

Cognitive Learning Theory, on the other hand, talks of "how we gain information from the world, how such information is represented and transformed as knowledge, how it is stored and how that knowledge is used to direct our attention and behaviour" (Hannafin and Peck, 1988). The principles used from here in computer-aided instruction are :

1. Learning involves the synthesis of prior information that must be recalled to active memory (*Orientation & Recall*)

2. Learning is facilitated by the use of existing processes/strategies (*Intellectual Skills*)

3. Learning will be more efficient if adapted to individual need (*Individualisation*).

Conclusion

The world of technology is growing at a very rapid rate. It is impossible to measure its impact on the educational spheres due to a continuous and growing interaction between the learning process and application of technology. It will be a great wrong on our part if we fail to adopt a suitable mix of modern and conventional techniques of learning. A new dawn beckons. As in all things computers have influenced our way of living and even way of thinking.

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communication should, however, be brief and to the point.

TEACHERS WORLD OVER

K.Walia*
J.S. Rajput**

Effort .

The largest 'single distinctive category of people engaged in professional and technical occupation' consists of fifty-seven million teachers employed in the world's formal education systems today. Highlighting this, UNESCO's *World Education Report 1998* has pointed out the anomaly that this magnitude itself makes it difficult for the society to accord a status to the teaching profession similar to the group of professionals like physicians, lawyers and engineers. There are several other factors as well which contribute to the existing status of teachers globally. This is one profession which is noted for the diversity of its members' background and the wide nature of their functions ranging from kindergarten to university classes. While some of them undergo professional preparation over a period of time with adequate rigour and skill attainments, others may just be modestly literate. With a global upsurge for universalisation of elementary education, the number of teachers has increased significantly. To meet the enormous need of more teachers in order to enable every young child receive elementary education, under qualified teachers were recruited in mid 60s when there were only sixteen million teachers in the world's formal education system as compared to fifty-seven million today.

1966 was a major milestone in evolving a worldview to identify efforts to enhance the professional and social status of teachers. Recommendations concerning the status of teachers were adopted by the Special Inter-Governmental Conference on the Status of Teachers convened by UNESCO in co-operation with International Labour Organisation (ILO) in Paris on 5th October, 1966. These recommendations have been presented to all the governments which are members of UNESCO and there has been regular monitoring of the implementation of the same by a Joint Committee of UNESCO and ILO. The outcome of monitoring has, however, been not very encouraging as only 72 states out of 144 replied to the questionnaire in 1976 as compared with 77 out of 126 in 1969.

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The concern for professional quality of teachers, their status and social credibility is very aptly summarised in the UNESCO Report — '*Learning : The Treasure Within*' which has presented a global view of thinking on education scenario that would be gradually unfolding itself in the 21st Century. Popularly known as 'Delor's Report' it summarises the essential ingredients for quality in teacher education :

Improving the quality of education depends on first improving the recruitment, training, social status and conditions of work of teachers; they need the appropriate knowledge and skills, personal characteristics, professional prospects and motivation if they are to meet the expectations placed upon them.

Realising the significance of teachers and their corresponding role, the *Fourth World Education Report 1998* brought out by UNESCO focuses on teachers and teaching in a changing world. The foreword by Federico Mayor, Director-General of UNESCO makes an emotional statement :

The world we leave to our children depends in large measure on the children we leave to our world. The world's hopes for the future rest with today's young people and their readiness to take up the challenges of the coming century. On the threshold of the twenty-first century, the education of the young has never been more in need of our commitment and resources. Our teachers have never been more crucial to our collective future.

It hardly needs reiteration that the teachers shape and reshape the society and the people. They determine the level of quality of life, level of community and the nation to which they belong. For ages, teachers have been honoured by the kings and cohorts, rich and poor alike but with modernisation and phenomenal increase in materialistic pursuits in human life, their social status has gradually declined. At this juncture, there is serious concern about their professional preparedness, scholarship, commitment and level of performance. Most of the teachers globally are employed in the formal sector, their status is, accordingly, weighed vis-a-vis others working at the same or similar level and getting comparable emoluments. It is a common premise in the educational policy of practically every nation that quality edu-

tion can be achieved only when teachers are professionally satisfied, motivated, committed and are willing to perform for the benefit of the learners, community and the society. Only those teachers who have a self-image as partners in nation-building will be able to contribute effectively in the educational development. The educational expansion and the corresponding decline in quality has brought the teacher in focus highlighting the changed role performance expected from him. The publication of UNESCO's *World Education Report 1998* is very timely, especially when the role of teachers is fast expanding and taking an entirely new shape. It is very aptly and appropriately titled — *Teachers and teaching in a changing world*.

Emerging Context

The *World Education Report 1998* is an outcome of an analytical and incisive study of national reports presented at the 45th session of the International Conference on Education, Geneva, 1996. It has also drawn extensively from several other reports of UNESCO meetings, publications and periodicals the world over. In addition, certain studies were commissioned by the Editorial Committee on specific aspects, the essence of which finds place in the report. Beginning with a brief introduction, the second chapter focuses on the changing status and emerging profile of teachers. The third chapter reports a detailed analysis of teaching contexts and pressures on teachers and the systems of teacher education. It is followed by emerging perspective vis-a-vis the new technologies which are impinging upon education, education development and particularly on teachers, their education and their task in respect of students under their charge. The annexures provide rich and valuable data and statistics.

The younger generation of today would be entering a world that is likely to be different in all spheres. Throughout their adult and professional life, they would sail through changes taking place at a much faster pace in scientific, technological, political, economic, social and cultural spheres of human activities. The major contribution of education systems could be the capacities and capabilities to bridge social and economic differences and disparities amongst people. The current trends are just in the reverse direction. UNESCO appointed an independent commission to conduct detailed global study and the outcome of the same concretises a very distinctive aspect of emerging educational thinking — 'the time to learn is now the whole life time'. Towards this, the Delor's report further adds 'Teachers have crucial roles to play in preparing young people not

only to face the future with confidence but to build it with purpose and responsibility'. As a consequence, it is imperative on the part of the global community to delineate the emerging challenges before teachers and educational policies both of which would need a dynamic approach to change and transform themselves regularly.

It is interesting to know that in the age group 6-11 years, there are 145 million children who are out of school the world over. This number would increase to 152 million by the year 2010. The corresponding figures for the age group 12-17 years are 284 and 324 million respectively. This is likely to happen, in spite of the fact, that every nation is attempting to bring every child to school and there are specific instances where all-out efforts are being made to ensure that they continue to remain in schools for atleast five to eight years. In 1980, 46% of 41.2 million teachers were teaching at primary stage. In 1995, while numbers increased the percentage out of 56.6 million teachers for this stage declined to 43% only. For secondary stage, the corresponding figures are 37% and 38%. The tertiary stage percentage increased from 9 to 11% in 15 years between 1980 to 1995.

The significance of universal basic education and its relevance were highlighted in the report of Joint ILO-UNESCO Committee of Experts on the Applications of the Recommendations Concerning the Status of Teachers in its 5th Session at Geneva in October 1988. Education must gain its credibility and capability to command respect and support of the entire community. In no other situation, teachers will command respect, support and status. The schools and teachers have the responsibility to provide the common basis of 'learning skills, knowledge, cultural respect for constructive achievement and adherence to common codes of behaviour which are essential to economic, social and cultural progress in society'

Status and Profile

The critical role which can be played only by the school, the education system and teachers towards national development can no longer be ignored by the society. The status of teachers and status of education were viewed by the UNESCO-ILO committee as inter-twined and any positive change in one would necessarily produce a corresponding positive change in the other. A good teacher is a friend who listens, is a role model, and helps children to grow and develop, who else than the teacher, can perform such a comprehensive function.

The situation of teachers' in every aspect is very different from what it was three decades ago when

the famous recommendations concerning the status of teachers were adopted by UNESCO and ILO in 1966. Globally, the economic, social and cultural context has changed the students under their charge and their backgrounds have also changed appreciably. Heterogeneity has increased and the functions have become more diverse, technical and broad-based.

The term 'status of teachers' could be given different meanings depending upon the objectivity of the interpreter. The expression 'status' as used in relation to teachers means both the standing or regard accorded them, as evidenced by the level of appreciation of the importance of their function and of their competence in performing it, and the working conditions, remuneration and other material benefits accorded them relative to other professional groups'. There has been an increasing recognition that advances in education depend largely on capabilities and abilities of the teachers. The aims and objectives of education can be achieved only through national recognition of the need for giving proper status to teachers alongwith public recognition for professional teaching. Teaching should be considered as technical and professional as any other profession. It requires expert knowledge and specialised skills which can be acquired and maintained only through rigorous and continuous study. To promote effective learning and enable teachers to concentrate on their tasks, congenial working conditions would be a prerequisite. In all these efforts professional organisations of teachers could play a critical role. Self-adopted codes of ethics have worked well in several situations.

The global pattern of enrolment in schools and universities by regions and levels, of education has changed considerably. It continues to evolve itself at this stage as well. The pressures on the systems and the teachers due to enhanced enrolment particularly in Southern Asian, Africa and other such regions shall continue to grow. Interestingly, in the countries which are in a stage of transition, the momentum of growth in secondary and tertiary education is either stagnating or indicating an overall fall in gross enrolment ratio between 1980 and 1995. In some countries, it is a consequence of falling birth rates and declining population pressure. The province of Kerala is one example in India. Such a situation would not be a discouraging one. However, in certain countries this ratio is declining because of lack of resource support systems and decreasing credibility of education and education system. In countries like India, expansion has resulted into diversities amongst the teacher force at elementary stage of education. In regions like

North-East more than 70% of teachers are untrained and large number of them are undertrained. There are certain other states like Bihar and Assam which have practically dispensed with the requirement of initial teacher training for elementary stage of education. This is a pedagogically unacceptable step. Obviously, it also decreases the average competence of the teaching force and consequently its credibility, social acceptability and the status. The number of teachers in India in 1985 and 1995 were 39.14 lakhs and 48.52 lakhs respectively. These indicate the pressure on the system and the pace of expansion.

Policy Perspectives

Globally, education policies have changed considerably over the last five decades. Education is now being given its due priority in national development and its share in national resources has also increased. There were genuine apprehensions in the mid-60s that with expansion in school education, increased number of teachers and necessity of appointing unqualified and under-trained teachers would result in lowering the status of teachers. However, it was also realised that the importance and utility of universal education was being gradually internalised in every community. There were also possibilities and scope for improvement in status of teachers. General trends in 60s and 70s indicate enhancement in emoluments and assistance to teachers in several countries. The trend could not however continue due to economic difficulties which were faced by several countries in 80s and also in 90s.

An overview of education policies world-wide presents a scenario which is in a state of flux in which common strands are difficult to identify except possibly at the regional and sub-regional levels. The pace of increase of student enrolments has been very different including decrease at some levels of education in more developed regions and countries. The teacher recruitment policies and priorities have also been changing. Two major strands of educational policies identified in the *World Education Report 1998* are the increasing commitment of most countries to democratisation of education and the tendency towards a more productivist view of educational quality and purpose. The World Conference on Education for All held in Jomtien in 1990 took account of both these aspects. In the context of policies, terms like 'assessment', 'effectiveness', 'performance', 'outcomes', 'fiscal constituents', 'human capital' etc, have gained greater currency. There are increasing demands for educational effectiveness and performance within the overall demand for good quality education. There

are instances where the countries have decreased their expenditure on education, the reverse has also taken place. It is also a notable trend that emphasis on pre-primary education, though pedagogically sound, has remained neglected at the implementation stage. In developing countries and less developed regions, the focus of the policies is on enrolments, retention and levels of achievements of the learners. These have significant imperatives for teacher preparation, role of teachers and upsurge for expanding the universe of basic education. There has been increasing realisation of the need to adhere to the provisions of human rights, equity, social justice and equality in various spheres. These will continue to be in focus in the educational policies particularly of the nations which have yet to achieve universal elementary education.

Teachers' salaries in most countries account for two-third or more of education expenditure. Increasing priority for education has not necessarily benefited teachers, particularly, if additional resources are mainly used for expansion of the system. In India, expenditure on salaries, consumes more than 90-95% of the allocation leaving little scope for resource availability for teacher and institutional initiatives. Similar situations exist in many countries. On the other hand, while reviewing a selected sample of ten developing and developed countries carried out for ILO in 1994, it was observed that political changes were moving towards more effective recognition of teachers' rights to freedom of association. Free collective bargaining was still the exception and that prevailing economic trends were undermining the role of collective bargaining in many countries, even those with long traditions of respecting the rights of teachers and other workers to bargain. Probably, it is still only a minority of countries that can match India's claim to provide a 'fair degree of freedom and flexibility' in respect to the 'rights and responsibilities of teachers'.

The composition of world's teachers has changed in several respects. The percentage of female teachers is increasing resulting in better enrolment of girls. In countries where female teachers are in majority, teaching is being treated as a female profession. In some cases there is a serious concern on lack of male preference for teaching jobs as the same results in non-availability of male role models to the learners in the sensitive years of schooling. The age profile is also changing. Teachers in less developed regions of the world are generally younger than their counterparts elsewhere. Their educational backgrounds are also changing. The percentage of world teachers who

have received atleast secondary education is much higher than the corresponding percentage thirty years ago. The percentage of trained teachers has also increased considerably. In India, this percentage was sixty one in 1960, presently it is around ninety. Unfortunately, the situation of teacher preparation is hardly any better as recruitment of teachers without pre-service training continues in various places due to several factors including expansion. The 1966 UNESCO-ILO recommendations has made a very distinct formulation: 'completion of an approved course in an appropriate teacher-preparation institution should be required of all persons entering the profession'.

The Supreme Court of India in its judgement delivered on 15th June, 1993 has made a very cognizant observation :

The Teachers Training Institutes are meant to teach children of impressionable age and we cannot let loose on the innocent and unwary children, teachers who have not received proper and adequate training. True they will be required to pass the examination but that may not be enough. Training for a certain minimum period in a properly organised and equipped Training Institute is probably essential before a teacher may be duly launched.

Globally, there are signs of increasing concern over the quality of education which undoubtedly can only be a consequence of good quality teacher preparation. A societal recognition of the need for teacher training is still scarce. This is one aspect which has hindered the recognition of teaching as a profession.

Concern

The concern for quality and relevance of education is highlighted in educational policies globally. It was also highlighted in the World Conference on Education for All in 1990 which declared that 'the progress of basic education must.....be on actual learning acquisition and outcome rather than exclusively upon enrolment, continued participation in organised programmes and completion of certification requirements'. In 1996, Delors Commission has related this to the teachers and reaffirms the importance of quality of teaching, and therefore that of teachers cannot be over-emphasised. The question before most of the education systems and the governments is — to what extent the quality and relevance of education in terms of learning outcomes can be improved in the context of existing resources constraints. This obviously is a difficult question.

The concern for quality in education is common not only to developing nations but is also true of the developed countries. With rapid changes in the world economy and resulting pressures on the nations to adjust to a more competitive global economic environment, quality and level of human capital becomes a strategic resource. Focus on quality would invariably lead to increased emphasis on studies, researches, surveys, establishment of databank and dynamic systems of monitoring and evaluation. As a pre-requisite, expertise has to be developed indigenously. Help has to come to developing countries from developed countries in this sector. Implementable steps of remediation would have to be undertaken if quality and relevance are to be retained and enhanced. Efforts have been made in assessing quality in several situations. The outcomes of the efforts however are limited. Most of the studies have mainly focused on cognitive outcomes of learning achievements. The current terminology creeping in the field of education utilises indicators like inputs, process and output alongwith market conditions for the products. Not all educational policy makers are comfortable with this trend.

Improved learning outcomes require congenial conditions for learning and teaching. The prominent ingredients would also include the physical infrastructure and the availability of teaching and learning material. A pilot survey conducted in 1995 by UNECO in co-operation with UNICEF indicated that in ten out of fourteen countries one-third or more of the pupils are gathered into classrooms without a useful blackboard. There is serious dearth of teaching aids such as, wall charts and a world map practically everywhere. One-third of the classrooms in this survey did not have teacher's table. In eight out of fourteen countries more than ninety per cent pupils attend schools which do not have electricity. The main finding, though, is a general one: if education is to be expected to help the poor to lift themselves out of poverty, then in the poorest countries education itself needs first to be lifted out of poverty. In this perspective, structural adjustment programmes designed to eliminate waste in public services could usefully be complemented by investment in the physical infrastructure of education: providing schools with water and electricity and reasonably solid walls and roofs, plus furniture and of course textbooks and other teaching materials.

There are several other issues which present a picture of an alarming situation particularly in the context of classroom size, the conditions of school building, the number of students and grades which

teachers are expected to handle. The issues of student attitudes and social behaviour are also increasingly becoming a significant ingredient of the school environment.

Teacher Preparation

There is a global consensus on appointing only trained teachers. There are genuine reasons for aberrations in certain situations while in others this may be deliberate and politically oriented. Approaches to teachers education expectedly may vary but there is a global consensus on that 'teaching should be regarded as a profession'. The UNESCO-ILO recommendations had in fact defined teaching as 'a form of public service which requires of teachers expert knowledge and specialised skills, acquired and maintained through rigorous and continued study; it also calls for a sense of personal and corporate responsibility for the education and welfare of the pupils in their charge'. Generally, pre-service and inservice teacher education programme, placed emphasis on the role of teachers within the classroom, often at the cost of neglect of preparing them for other aspects of teacher's roles in the school and the community. There have been certain instances of a shift in perspectives of teacher preparation aiming to make it more humanistic and sensitive to the needs of others.

The need for training large number of teachers has also resulted in distortions of teacher preparation programmes, particularly, at the initial entry to the profession or the preservice stage of teacher preparation. India has been no exception. The powerful strategies of distance education and correspondence courses have been commercialised awarding degrees to candidates without providing the necessary professional preparedness. Such trends have been observed in many countries where schools are becoming mere training camps to pass examinations without focusing on moral, humanistic, and ethical aspects of individual's preparedness for life. The establishment of National Council for Teacher Education (NCTE) has been welcomed as a dynamic step in moving towards establishing more rigorous standards in teacher preparation.

While general expectation is of higher standards of effective teaching everywhere, the same is impossible of achievement unless and until the corresponding higher standards of teachers are ensured. Obviously that would require highly competent and professional teacher educators preparing equally, if not more, competent teachers who in turn are committed to deliver in the schools and outside the schools.

The National Council for Teacher Education in India has recently brought out major documents on preparation of teachers emphasizing three critical areas i.e. competencies, commitments and performance. A highly competent teacher may not be necessarily a committed one. Similarly, a highly competent and committed teacher may not be a good performer. As such, in the coming years the focus would be on commitment and performance with basic acquisition of competencies. Evaluation of the teachers would be by the society and the parents. There can be no replacement to this evaluation which would gradually require more and more concrete shape. The global trends presently are that teacher education curricula everywhere lay emphasis on outside the classroom activities and working with community and parents and acquiring understanding of socio-economic context in which the teachers are expected to perform. Unfortunately, in implementation only the cognitive aspects leading to examinations and awarding of marks get the focus. It is a difficult task but the trend has to be reversed. It has also, generally, been observed that the teachers at secondary stage focus on one or two subjects which they teach, largely ignoring the other aspects and the learner. At the primary stage, the situation is slightly better. Consequently, primary school teachers have longer teaching hours as compared to secondary teachers. Out of forty eight countries at primary stage, six countries provide thirty hours per week work to the primary teachers, while at the secondary, the same is the case only in four countries.

The importance of inservice teacher training which is further education of teachers has grown over the last three decades. Teaching is now acknowledged as a learning occupation where practitioners need opportunities throughout their career to upgrade their knowledge, skills and capacities. Several countries have planned well-designed programmes for teacher education at primary stage and secondary stage as well. In India, the establishment of District Institutes of Education and Training (DIETs), Colleges of Teacher Education (CTEs), Institutes of Advanced Studies in Education (IASEs), is a major innovative effort to provide both preservice and inservice education in well-equipped and well-staffed institutions to the teachers.

Assessing teacher effectiveness is a very tough and sensitive area. It is, at the same, extremely critical and professionally desirable to ensure that teachers really perform and are conscious of the accountability dimension. The trends in many countries are towards decentralisation of the governance of the

school system bringing it in direct contact with the community for the assessment of school performance and teacher effectiveness. Several countries have identified the checklist of teachers' behaviour which could be utilised in teachers' appraisal. These include preparation in the classroom, giving attention to homework, continuous evaluation, teaching methods, regularity, punctuality and several others. While the teachers are generally apprehensive of attempts by others to assess their performance and efficacy, they have very genuine point in highlighting that no system of assessment would be effective unless it also has, a strong inbuilt component of reward, recognition and motivation.

Technologies and Teachers

The new information and communication technologies are supposed to expedite and facilitate programmes towards universalisation of elementary education and contribute more effectively to meet the individual learning needs which are not being met by conventional approaches. The very shape of school and classroom is changing sharply. In certain societies, home may become more attractive to the learners than the school. There are, however, other facets to this scenario as well. Majority of the countries lack basic infrastructural facilities for gaining access to new technologies. Most of the world schools still do not have electricity. India launched a massive programme, 'Operation Blackboard' in 1987 to provide basic learning material to more than half a million schools. Unfortunately, schools without blackboards exist even today, not only in India but even elsewhere. Disparities in potentialities to accept and utilise new technologies in the educational sector exist very prominently and shall continue to exist in future as well. There is a strong school of thought which feels that educational sector is predominantly and professionally dependent on the quality of human interaction and is concerned with values and attitudes alongwith cognitive achievement. This complex base of education cannot be left predominantly to the technology. Resource constraints and inadequate motivation within the school also act as a deterrent.

Computers are evolving into the present media, similar to books and note-pads and their integration and the interaction in education will pose the most radical challenge to conventional formal education. The development of worldwide websites and availability of internet could enable the user to scan and download the documents in the areas of their interest shifting the focus from teacher directed learning to self-motivated homemade learning. However, to

what extent these would be available to the majority of the children and most of the nations in the world is yet unclear. The diversities become too large in proportion even in such innovative situations.

The implications of new technologies and their impact in the context of the teachers, their teaching and the preparation of teachers need to be examined seriously. Some of the obvious implications are that the nature of teaching learning material would change drastically. Books and other textual material is to be supplemented increasingly by multimedia, computers and softwares. However, majority of the countries would face a problem in developing softwares suitable to their own conditions and situations. In case they do not develop indigenous capacities for software development, they would not be able to utilise hardware even if they can procure the same. Related to this is the question of teaching methods and approaches, which again would require new approach and regular orientation of teachers lest they should be left behind in the inevitable march for keeping pace with changes.

The National Policy on Education 1986-92 very aptly and comprehensively summarised the 'ethos'

in teacher education which appears to be globally relevant.

The teachers world over, hopefully would acquire adequate and relevant competence, commitment and the will to perform. They would then influence the policies and ensure their effective implementation.

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ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY

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NOTIFICATION — Admission to P.G. (Master's Degree) Courses 1998-99

Applications are invited from eligible candidates for admission to the following Master's Degree courses

M.Sc. (Ag.)/M.Sc. (Horti.)/M.V.Sc./M.Sc. (Home Science/M.Tech. (Dairying)/M.Sc. (Dairying) courses :

QUALIFICATIONS : A pass in the relevant Bachelor's Degree examination i.e., B.Sc. (Ag.) for M.Sc. (Ag.), B.Sc. (Horti.) for M.Sc. (Horti.), B.V.Sc & A.H. for M.V.Sc., B.Sc (Home Science) or B.H.Sc (Rural) for M.Sc. (Home Science) and B.Tech. (Dairying/B.Sc (Dairy Technology) offered by Agricultural University or NDRI for M.Tech. (Dairying)/M.Sc. (Dairying) courses with a minimum of 50% marks in traditional system or OGPA of 7.00/10.00 or 2.50/4.00 SC/ST candidates with a minimum of 40% marks in traditional system or OGPA of 6.50/10.00 OR 2.00/4.00 are eligible. Candidates who passed B.Sc (Ag.)/B.Sc. (Horti.) of 3 years duration are not eligible.

Applications alongwith prospectus can be obtained in person on payment of Rs. 200/- from 10.8.1998 to 8.9.1998 from any of the following colleges

1. Principal, College of Agriculture, Rayendranagar, HYDERABAD-500 030 - A.P.
2. Principal, College of Home Science, Saifabad, Adjacent to SECRETARIAT, HYDERABAD-500 004.
3. Principal, College of Veterinary Science, TIRUPATI-517 502, CHITTOOR DIST.
4. Principal, Agricultural College, BAPATLA-522 101, GUNTUR DIST.

Those desirous of obtaining the application by post should send their requisitions with full address to the above authorities alongwith a crossed Demand Draft for Rs. 210/- drawn in favour of 'COMPTROLLER, ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY, RAJENDRANAGAR, HYDERABAD'. Postal orders/Money orders will not be accepted. Applications shall be sent by Post upto 3.9.1998.

Applications duly filled in including those sent through Employers should reach 'THE REGISTRAR, ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY, RAJENDRANAGAR, HYDERABAD-500 030 A.P. on or before 8.9.1998 by 4.00 P.M. Postal delays will not be condoned.

V. Prabhakar Rao
REGISTRAR

Students Psychological Health

Teachers' Role

V.N. Rao*
R. Parthasarathy*

The mental health professionals — Psychiatrists, Psychologists, Psychiatric Social Workers and Psychiatric Nurses associated with students mental health services have observed that late adolescent college age people are highly vulnerable to the limitations in personal growth imposed by emotional disturbance and adjustment difficulties of varying severity. Furthermore, problems in students are unique, in that many of the difficulties are related to developmental issues of gender, self-esteem, competition and cultural membership in a population in transition.

On interviewing a group of college students in a University campus, it is found that the students commonly encounter the following problems : Parents frequently criticising; lack of real love and affection at home; unpleasant relationships with parents; parents insisting on strict obedience, lack of money; parents objecting to the kind of friends companions; irritability of father/mother; frequent quarrels with siblings, parents treating college student as a child; feeling that friends have had happier home life than the individual.

These problems have strong impact on their participation in the classroom, scholastic achievement, involvement in co-curricular activities, friendliness, feelings of loneliness, level of self esteem, adjustment with classmates and teachers and fulfilment of the other expectations about students role and responsibilities.

In order to prevent or effectively cope with these psychological, interpersonal, adjustmental difficulties, the students need to develop clear understanding about self esteem, peer pressure, mental health, stress and coping, common mental health problems and healthy life styles.

It is healthy to have high self-esteem, because it means that we value ourselves for what we are : one need to accept oneself despite one's shortcomings, mistakes or disabilities. In contrast, low self-esteem means a person having negative thoughts about one self — both physically and mentally. As a result, one sees others as better than himself and pressured to conform to peers. One can increase his/her self es-

teem by developing healthy sense of what is right and what is not; learning to be assertive and to like oneself; be responsible; appropriately voicing one's opinion; learning to say "no" without feeling guilty; learning to deal with criticism in a positive way and learning to give and receive compliments easily.

In establishing relations with friends, the students need to recognise positive and negative peer pressure. Young people can influence each other in many beneficial ways like encouraging each other to do well in college, participating in healthy recreational activities, being involved in social service and allied activities and gaining maturity and independence.

Sometimes friends may have different interests and may persuade to indulge in harmful activities like smoking, taking drugs and drinking alcohol etc. Here the students should learn to draw the line when they are encouraged to do things that are bad for himself or others. The students should be assertive to be different in such situations. If such assertiveness does not help one should be prepared to make a clear break from them. Though painful for that moment, such actions are valuable in preventing more serious psychiatric and psychological problems in later life.

It is important to enrich the psychosocial competence of the students so that they could deal effectively with the demands and challenges of every day life. According to WHO (1996) the most direct interventions for the promotion of psychosocial competence are those which enhance the person's coping resources and personal and social competencies. The recent document on life skills education prepared by WHO (1996) identifies a core set of 10 skills that are at the heart of skills based initiatives for the promotion of health and well being of children and adolescents. These are : 1) decision making, 2) problem solving, 3) creative thinking, 4) critical thinking, 5) Effective communication, 6) interpersonal skills, 7) self awareness, 8) empathy, 9) coping with emotions, and 10) coping with stress. Education programmes teaching these skills have been developed for prevention of AIDS, for peace education and for the promotion of self confidence and self esteem.

The students require orientation about effective study habits. If one analyses the profile of rank stu-

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dents or successful candidates in public competitive examinations, it becomes obvious that these candidates do share a common characteristic i.e., effective study habits and good preparation. Without effective study orientation, mere reading of books, journals and magazines does not fetch high dividends. Moreover, success in these examinations depends more on developing certain abilities like listening, reading, thinking, writing, talking, remembering and acquaintance with day to day worldly events. Researches carried out in various parts of the world brought forth a fund of knowledge related to effective ways of handling a book, dealing with examinations and effective study habits. The fundamental principles underlying these findings emphasize good preparation and examination techniques which would go a long way in making the students excel in their performance, whether it is school/college final examination or viva voce for Ph.D examination or any state or national competitive examinations.

Positive principles of mental health could be incorporated into the day to day activities of students life. Following twelve principles could form the topics for seminars, group discussion, elocution, essay competition and allied curricular and co-curricular activities.

- 1) Physical health and mental health go hand in hand;
- 2) Self understanding is essential for one's happiness;
- 3) Mental health consists, in large part of meaningful interpersonal relationships;
- 4) Having a confidential relationship and talking out our problems paves the way for harmonious living;
- 5) Realistic optimism is important for handling unexpected future events;
- 6) Future plans need to be adequately accompanied by actions in here and now;
- 7) Experience in life adds to our strength to handle the stresses and strains of daily life;
- 8) A mentally healthy life will more readily be achieved when there is an appropriate balanced regime consisting of both work and play;
- 9) Sense of humour is indispensable for happy life;
- 10) Instead of expecting perfection of himself and others it is better to learn to be satisfied doing the best at any given time;
- 10) Instead of expecting perfection of himself and others it is better to learn to be satisfied doing the best at any given time;
- 11) Capitalising on the values and aspirations of religion of love is essential for happiness; and

- 12) The person who is able to enjoy the ordinary occurrences of daily living tends to be substantially above average in mental life.

In all such promotional and preventive activities, college teachers play vital role. Teachers would therefore have to be given adequate orientation in early diagnosis of the common mental health problems. The focus is on basic understanding of mental health and early manifestations of emotional behavioural problems and treatment facilities available in the community. In addition, the teachers could be given intensive training in skills of interviewing, establishment of rapport and counselling techniques like clarification, environmental manipulation, listening, ventilation, education and guidance. At the end of the orientation, the teachers will be equipped with necessary skills of counselling emotionally disturbed students in colleges. By this method, the self esteem of teachers would improve considerably and their approach to the students is likely to become more humanistic and scientific.

Teachers whose self esteem is lacking in the areas of belonging, identity, acceptance, security and competence, may mask it. If the teachers feel insecure, unsupported and incompetent, it will show up in their silence or anger at the staff meeting, in their cynicism about change, about new ideas, joint venture in problem solving and in their refusal to share their problems faced by the students in the college.

Often the teachers become alert when certain things go wrong either with the student or in the classroom. But when students show good behaviour and high performance, it goes unnoticed. Such attitudes need to be changed, so that, the teachers become the source of support for the students encountering a wide variety of problems.

Ultimately, the college teachers need to acquire the following qualities to be able to contribute to students psychological health :

- a) Sensitivity to students problems;
- b) Open mindedness in understanding student situations;
- c) Objectivity in approaching the situation;
- d) Competence by virtue of training and experience;
- e) Humane and helping qualities;
- f) Trustworthiness involving confidentiality;
- g) Self awareness and understanding; and
- h) Good psychological health.

With these qualities and skills the teachers would become confident to plan and organise programmes related to healthy sexual development. The mere ut-

terance of the word "sex" arouse feelings of sin, disgust, shame or uneasiness in the society. In such a society, the student with sexual problems suffers a lot; he is unable to share his problems with anybody or to do something to overcome the problems. When he sees or reads attractive advertisements on treatment for sex troubles he / she gets thrilled in the hope of a finding solution for his / her problem. The individual reads pornographic literature and finds different things said about sex problems which invariably aggravate his fears and worries.

The students erroneously believe that masturbation constitutes a great moral and intrinsically serious disorder. The ill effects of unscientific view leads to lots of problems like decreased interest and concentration in studies and co-curricular activities, examination phobia, anxiety, panic and extremely depressed reactions. Among women students many misconceptions, doubts, and fears are associated with different normal biological functioning like menstruation, sexual relationship, pregnancy, breast feeding and menopause.

Students require guidance in the following areas :

- 1) Acquiring knowledge, skills and knowledge which will prepare them for the responsibilities of adult life, marriage, parenthood and participation in the life of community and thus contributing to healthy and satisfying lives;
- 2) Development of individual to promote happiness and responsible behaviour;
- 3) Understanding their feelings and beliefs and to cope with the physical, emotional and social changes which are part of growing up and enables them to recognize what is important and to behave in a way which is caring and responsible; and
- 4) Learning how to communicate effectively with others and to make wise decisions about all matters connected with family life, and personal relationships.

UNESCO (1996) has brought out an adolescence education package consisting of 4 modules on physical and psychological aspects, social aspects, role expectations and sexually transmitted diseases including AIDS. Such packages are meant to serve as practical guide primarily for teachers and secondarily for trainees, guidance counsellors and youth workers who are engaged in teaching, training and communicating issues related to students. Most of these lessons have been adapted to approximate their suitability to Asian and Pacific situation. The users will have the options to select only those modules which are useful and relevant and acceptable in their respective environment.

By the above said strategies, the teacher can play a significant role in promoting happiness of the students and prevent several psycho social and psychiatric problems. Such problems are identified at the earlier stages for prompt intervention either by themselves or by mental health professionals. A mentally healthy teacher — one who has confidence in himself and his students, one who expects much and gets much, one who is concerned and recognises that the time is now and the place is here — is the dynamic influence for mental health in the classroom.

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Operation Knowledge

Dr. Murli Manohar Joshi, Union Minister for Human Resource Development, and Science & Technology, delivered the Convocation Address at the 36th convocation of the Indian Institute of Technology, Mumbai. He said, The Prime Minister's Task Force on Information Technology and Software Development had suggested, "an Operation Knowledge which will see installation of computers with Internet access in every school, university and public hospital by 2003, networking of all centres of higher education to spread distance education and making IT compulsory for all degree courses." Excerpts

This is the Golden Jubilee Year of our country and it is entirely appropriate that Science and Technology have been accorded a pride of place in the development of India. May 11, 1998 demonstrated Indian Science & Technology in all its glory. It was a red letter day that saw a trinity of achievements : Launching of Hansa 3, the CSIR designed all composite, 2-seater, advanced trainer aircraft; Test firing of Trishul, the short range surface-to-air missile; and the historic triple nuclear explosion at Pokhran which established India as a credible nuclear weapons state. The tests showed the mastery of the Indians not only over the nuclear fission, but also the nuclear fusion.

The Golden Jubilee Year of the Independence also saw the launch of Indian remote sensing satellite IRS-1D, using the Polar Satellite Launch Vehicle (PSLV), which was designed and built in India, by Indians. It proved India's capability to place 1200 kg. class of Satellites in polar orbits and heralded the era of technological self reliance in launching satellites. The next flight PSLV-C2 due this year, will launch IRS-P4, meant for observation of oceans. PSLV-C2 will also carry on board a Korean and a German satellite, signifying the start of marketing of Indian launch services, internationally. The INSAT system continues to provide vital services

in telecommunication, television, broadcasting, meteorology and disaster warning. It is also being used to conduct the Jhabua Development Communications Project under which training and education is being provided to tribals in Madhya Pradesh. INSAT-2B is due to be launched in 1998-99, it will have 11 transponders leased out to the International Telecommunication Satellite Organization (INTELSAT). The progress in the development of Geosynchronous Satellite Launch Vehicle (GSLV) is very heartening. The launch of GSAT-I is also due this year, the GSAT satellites will demonstrate new technologies of satellite communications like digital audio broadcasting.

In the years to come as the demand on Science & Technology will expand, technical skills of the highest order would be needed. We will have to be competitive on the world scene, contribute to the global economy and have our fair share of it. We will, therefore, have to further strengthen our scientific base and prepare ourselves for excellence and establish ourselves as a strong and technically sound nation.

In order to achieve these objectives a lot is expected of the IITs — the premier technical institutions of the country. This Institute — IIT Bombay — has a major role to play

in this regard. Located as you are in the industrial heartland of the country, the interaction between the institute and the Industry is of critical importance. Therefore, I propose to stress on the interaction between the present technological set up and the Industry. We have been talking about it for some time but not enough seems to have been done so far. There are so many intersecting areas between the two systems that collaboration and interaction is absolutely essential and yet in spite of this recognition this remains limited.

Since industries have not been readily coming forward to fund long term industrial research and development programmes, during the last Plan, the Ministry of Human Resource Development, with the help of a special grant from the Planning Commission, initiated a number of projects under what were called the Technology Development Missions. Under these missions which were in areas like Food processing, New Materials, Integrated Design and Competitive Manufacturing, Energy Efficient Technologies, etc, a number of goal-oriented projects were identified in conjunction with industrial partners by the IITs. Government funded these projects to the extent of 80% with the requirement that the industry fund at least 20%. These mission projects have given a boost to industrial sponsored research in the country. A short while ago, I saw one such example of *Swadeshi* high technology developed in this Institute, a Supercritical Fluid Extraction Plant built under the Technology Development Mission on Food Processing. There have been many such successful projects under the Technology Development Missions at all the IITs. I need hardly add that there should be many more such successes in the years ahead.

Another significant way of interacting with industry is by offering consultancy services in critical areas like software development, product and process development, information systems, environmental issues, etc. Consultancy projects are usually short-term in nature and are given by industry with the objective of solving a specific problem faced by them. The projects need to be handled in a business-like fashion. I am glad to note that IIT Bombay has, in position an efficient structure for handling such activities and that Rs. 4.50 crores worth of assignments were carried out last year. Given the size of the Institute and the faculty, these activities can and should be expanded.

I turn now to a subject to which the Government attaches the highest priority, viz., Information Technology and Software Development. There can be no doubt about the role of information in the society of the future. The strength of a nation will to a large extent be determined by its ability to collect relevant information accurately, to process it automatically and to use it in decision making processes. Although we are new entrants in the area of Information Technology, yet, we are recognized as one of the countries contributing significantly to this sector. The growth rate in these sectors has been impressive and exports have increased by approximately 50% every year. A number of cities like Bangalore and Mumbai have emerged as places where world-class work is done and from where a large number of software companies operate.

The Government has recognized that the future lies in mastering the Information Technology and that India has the requisite potential for emerging as a Global Information Technology Power.

The Prime Minister's Task Force on Information Technology and Software Development has just submitted its Report which lays down a three pronged initiative to make India as Global IT superpower: (i) Accelerating the setting up of IT Infrastructure, (ii) Creation of the Policy ambience for increasing software exports to \$50 billions by 2008, and (iii) Extensive use of IT in all sections of society. To achieve the thrust, the report suggested an Operation Knowledge which will see installation of computers with Internet access in every school, university and public hospital by 2003, networking of all centres of higher education to spread distance education and making IT compulsory for all degree courses. As a matter of fact, we have hardly any time to lose. Ironically, while we have miles to go even ensuring universal literacy we have been overtaken by the imperative necessity to be not only IT literate, but proficient in the use of IT to cope with the demands of a future that is already upon us.

Supercomputers is an excellent example of the fact that when India is challenged, she rises to the occasion and delivers. India was stung by the humiliating restrictions for the supply of Cray computer for weather prediction. Flosolver, developed by National Aerospace Laboratories of CSIR, was the first parallel computer to solve the parallelisation of the Cray-specific GCMT-80 weather prediction code. It became the pace setter for several successful national initiatives in parallel computing. This year, C-DAC, celebrating the tenth anniversary of its founding unveiled, PARAM 10000 Supercomputer which can perform 100 Giga Flops i.e. hundred thousand million mathematical operations per second. It places India amongst the league of na-

tions which are advancing the frontiers of supercomputing into the teraflop ranges (1000 Giga Flops). Such technological capability currently exists only with the USA and Japan. With PARAM 10000 India has no longer to depend on the availability of high performance super computers from USA or elsewhere. Juxtapose this development with India's achievements in space and nuclear energy and one has the emerging contours of a great scientific power.

All these achievements apart, I am concerned at the quality of research produced by our universities and technical institutions and the research publications vis-a-vis international research publications. In 1981 Indian research publications were 2.44% of the world research publications. This has been gradually diminishing and in 1991 it had come down to 1.77% and even less in 1995-96. In 1995-96, 11084 research papers were published and our share was only 0.1%. This is an area where we have to concentrate and work hard to produce world class researches. The standard of papers published also needs to be considerably improved. We had a name in this, and we must regain our prestige as distinguished researchers. Bhagwadgita says योगः कर्मसु कौसलम् to achieve excellence in whatever one is doing is also Yoga. In the area of research we must produce excellent work. We have a vast area in all branches of scientific knowledge and I hope and pray that we succeed in this.

One more important way of interacting with industry is through the medium of continuing education programmes. The rate at which technological innovations are brought into practice implies that an engineer may have to upgrade his skills and knowledge

base at least five or six times in his professional career.

I am, therefore, happy to note that apart from running a large number of short duration programmes, IIT Bombay has conducted selected programmes entailing sustained efforts to meet specific intensive demands of industry. A major manpower upgradation programme entailing weekend instruction spread over a period of two years has been conducted successfully for Reliance Industries. A programme in Piping Engineering for process industries, being conducted twice a year, has attracted heavy demand as well as inputs from user industries. A few hundred piping engineers have been provided to the industry, both in India and abroad, through this programme. Such successful models need to be replicated.

In the developed countries, industries have played a crucial role in human resource development. With funds becoming scarce every day, our industrial houses also need to come forward by setting up new institutions and by strengthening existing institutions and universities. They can and should help in a variety of ways by donating equipment and instruments, by setting up new laboratories, by endowing chairs for faculty appointments and by creating student fellowships and scholarships. More industrial houses should come forward and follow the example set by philanthropic industrialists earlier. The Industry must set apart a certain percentage of their turnover for Research and Development and closely associate not only with the leading institutions but also with the large network of National Laboratories, where excellent scientists and facilities are at hand. We are there to work with them

and provide solution to their problems and requirements. In the long run the Industry and the nation as a whole will be immensely benefited.

One of the most important things in our present context is to be self-reliant. We have made our scientific and technological progress mostly on our own. The sophisticated technologies do not come without strings and pressure is built-up by the international community if you do not toe their line. We are passing through such an experience. The nuclear explosions were necessary to establish our credentials and ensure the security of the nation. Obviously this has not been to the liking of some countries. Some financial sanctions have been imposed on us. But I think these will not hamper our economic growth though there may be some difficulties. This is the time when we have to assert our sovereignty and be masters of our own destiny. Everyone has to respond to the needs of the time. This will need the cooperation of all sectors of economy, the industry, the workers and above all the people of this country.

I wish to talk to you a little about the realities of life. In spite of advancement in education and our technical skills a large part of our country remains undeveloped. This is an area which requires the attention of all well placed and qualified citizens. A large majority of our people still live in rural areas. Their conditions of life are not as conducive and comfortable as we find in the cities. We must take our knowledge of science and technology to the rural areas so that we could devise methods by which the life could be made easier for our masses. For example about five decades ago we had only the traditional bullock carts with wooden wheels. Then a cart with

tyres was devised, which the animals could pull easily. Similarly, some innovation has been brought in agricultural tools and implements. The water for drinking and irrigation are problems where our knowledge of science and improvisation could provide a better quality of life to the people. The rain water harvesting and conservation of water resources are the areas where modern science and traditional wisdom could contribute a lot.

Environment and pollution not only in cities but also in the villages are the areas which require the attention of scientists. Our cultural roots are becoming bare. Our traditional living taught us to take care of the nature and our animal life. This compassion and sharing is inculcated from the childhood. The neem leaves are still used to preserve foodgrains, fumes of various herbs used for purifying the atmosphere and these have been found useful.

The recent technologies from CSIR laboratories convincingly show that it is not necessary to sacrifice environment for development. Besides the celebrated trinity of achievements, May 11, 1998 witnessed yet another remarkable event, the successful demonstration of eco-friendly, gas fired cupola technology to the foundries of Agra, which saved them and would save the Taj Mahal. The cokeless cupola technology was developed by National Metallurgical Laboratory of CSIR for environmentally cleaner fuel (Natural Gas). The development was expedited in response to the dire needs of the foundries in Agra in view of a directive of the Supreme Court of India that all industries of Agra must convert from coal/coke based furnaces to gas operated furnaces for conservation of the Taj Mahal.

Similarly, Mathura Refinery, Mathura in UP received an environmentally clean technology for microbial desulphurisation of tail gas emissions, amounting to 2,000 kg/ht, containing hydrogen sulphide, with recovery of elemental sulphur. The technology has been developed by NEERI, who were retained by Mathura Refinery for installation of the desulphurisation system. The system has been satisfactorily functioning for about a month now and will be formally handed over to the Refinery this month.

Our forest cover is being reduced and some of the species and our wild life are on the verge of extinction. It reminds me of a Jataka story. You know that these stories convey a deep message in a very subtle manner. I wish to share this one with you.

Long long ago, King Brahmadatta ruled the kingdom of Varanasi. He wanted to build a large palace with big halls and corridors supported by large beams, which would be the envy of other. He, therefore, ordered his men to go round and look for strong large sal trees. As the king's men were looking for such trees, they found a huge Sal tree not too far from the palace. It was a giant tree with large branches swinging in the cool morning breeze. They, therefore, felt very happy and communicated the news to the king. The tree God, who lived in the Sal tree observed all this. He became sad, not for himself but for hundreds of young Sal trees which were growing around and the birds, beasts and insects who found shelter on the trees. He was filled with pity because he knew that if the tree was cut hundreds of small plants would be destroyed too and, therefore, that night he appeared in the dream of the king.

That night Brahmadatta saw in his dream a radiant figure smil-

ing at him. The figure spoke to him that he was the spirit of the Sal tree and that he should not destroy the mighty and beautiful tree. But the king said, he wanted to build a palace and therefore, the tree had to be cut. The spirit of the tree therefore asked the king to hack off the crown first then the branches and then finally gently rip out the tree by the roots from the bosom of the earth.

Brahmadatta was surprised. Why should the tree suffer the pains of amputation? The Deva or the spirit of the tree explained, if you cut me one time, hundreds of small plants would be crushed under the weight. The birds and their nests will be destroyed. Many will perish. King Brahmadatta was moved by the compassion of the Deva and he gave up the idea of cutting the tree for his palace. Next morning he offered worship to the Sal tree and distributed wealth to the poor. The Jataka story ends with the smiling Buddha saying "In that life I was the Bodhisattva the spirit of the tree"

It is our duty to do everything to preserve the environment to keep it pure and find new techniques of managing waste and effluents and where possible convert the material into manures. We must also take active part in educating the people in its preservation in every way. On all auspicious occasion our prayers are, ओ धीं शांतिः अंतरिक्ष ओ शांतिः पृथिवी शांतिः आपः शांतिः औषधयः शांतिः वनस्पतयः शांतिः विश्वेदेवा शांतिः इश्वर शांतिः ओ सर्व शांतिः शांतिरेव शांतिः स्मर्ग शांतिः शांतिरेति Let there be peace in the entire cosmos; let there be peace in the skies, let there be peace on earth, let there be peace in the waters, let there be peace in herbs and vegetation, let the divine bring peace to us, let all the knowledge bring peace and let everywhere be peace, peace and peace.

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World Population Data Sheet

	Population mid-1998 (millions)	Births per 1,000 pop.	Deaths per 1,000 pop.	Natural Increase at Current Rate (%)	"Doubling Time" in Years	Projected			Infant Mortality Rate	Total Fertility Rate	Pop/ sq mi	Life Expectancy at Birth (years)		Percent of Women Ages 15-49 Giving Birth Each Year		Percent of Married Women Using Contraception		Cost of View of Birth Rate	GNP Per Capita, 1996 (US\$)	Land Ave (sq miles)	Pop/ sq mi	Capital City	
						Population (millions)		2010		2025		Date Avail. Code	Percent Urban	15-19	All Methods	Modern Methods							
						Male	Female																
WORLD	5,926	23	9	1.4	49	6,903	8,082	58	29	32		64	68	—	44	6	56	51	—	\$5,180	—	—	—
MORE DEVELOPED	1,178	11	10	0.1	548	1,217	1,240	8	1.6	1.9		71	79	—	73	3	67	61	—	20,240	—	—	—
LESS DEVELOPED	4,748	26	9	1.7	40	5,687	6,842	64	3.3	3.5		62	65	—	36	6	54	49	—	1,230	—	—	—
AFRICA	763	40	15	2.5	27	979	1,288	91	5.6	4.4		50	53	—	31	12	22	17	—	650	—	—	—
SUB-SAHARAN AFRICA	624	42	16	2.6	27	805	1,076	96	6.0	4.5		47	50	—	27	14	17	11	—	510	—	—	—
NORTHERN AFRICA	167	29	8	2.2	32	210	259	59	4.0	3.9		63	67	—	47	6	41	37	—	1,280	—	—	—
WESTERN AFRICA	228	45	16	2.9	24	296	409	92	6.4	4.6		49	52	—	24	15	13	6	—	310	—	—	—
EASTERN AFRICA	233	42	18	2.4	29	295	379	104	6.0	4.6		43	45	—	21	13	18	12	—	230	—	—	—
MIDDLE AFRICA	90	46	16	3.1	23	127	187	103	6.5	4.6		48	51	—	34	18	9	3	—	300	—	—	—
SOUTHERN AFRICA	45	28	12	1.7	42	50	54	55	3.5	3.6		54	58	—	53	10	49	48	—	3,280	—	—	—
NORTH AMERICA	301	14	8	0.6	117	333	376	7	2.0	2.1		73	79	—	75	5	71	68	—	27,100	—	—	—
LATIN AMERICA & THE CARIBBEAN	500	25	7	1.8	38	591	697	36	3.0	3.4		66	72	—	72	8	67	58	—	3,710	—	—	—
CENTRAL AMERICA	132	29	5	2.3	30	162	197	32	3.4	3.7		68	74	—	66	8	60	52	—	3,090	—	—	—
CARIBBEAN	37	21	8	1.4	48	42	48	40	2.8	3.1		66	71	—	60	8	55	51	—	—	—	—	—
SOUTH AMERICA	331	24	7	1.7	42	369	453	37	2.8	3.3		66	72	—	76	8	72	62	—	4,110	—	—	—
OCEANIA	30	18	7	1.1	63	34	40	28	2.4	2.7		71	76	—	71	3	67	62	—	15,430	—	—	—
ASIA	3,604	23	8	1.5	46	4,235	4,965	57	2.8	3.2		64	67	—	34	4	60	54	—	2,490	—	—	—
WESTERN ASIA	182	29	7	2.2	32	233	303	54	4.0	3.7		65	69	—	64	7	41	—	—	—	—	—	—
SOUTH CENTRAL ASIA	1,442	28	9	1.9	36	1,768	2,155	74	3.6	3.7		59	60	—	27	7	41	36	—	410	—	—	—
SOUTHEAST ASIA	512	24	8	1.6	42	602	709	55	2.9	3.5		62	67	—	35	5	55	47	—	1,580	—	—	—
EAST ASIA	1,469	16	7	0.9	74	1,631	1,794	29	1.8	2.5		69	74	—	37	1	81	78	—	4,750	—	—	—
EUROPE	728	10	11	-0.1	—	731	715	10	1.4	1.9		69	77	—	71	2	—	—	—	13,710	—	—	—
NORTHERN EUROPE	95	12	11	0.1	535	97	99	6	1.7	1.9		73	79	—	84	2	68	—	—	20,320	—	—	—
WESTERN EUROPE	183	11	10	0.1	517	187	184	5	1.5	1.8		74	81	—	79	1	75	70	—	28,250	—	—	—
EASTERN EUROPE	307	9	13	0.4	—	301	290	15	1.3	2.0		63	74	—	68	4	57	—	—	2,350	—	—	—
SOUTHERN EUROPE	144	10	9	0.1	853	147	143	8	1.3	1.7		73	80	—	61	1	—	—	—	15,290	—	—	—

Notes : (—) indicates data unavailable or inapplicable

Source : Population Reference Bureau, 1875 Connecticut Ave., NW, Suite 520, Washington, DC 20009 - 5720 USA.

CAMPUS NEWS

Environmental Engineers Meet

Prof. V. Ramakistayya, Vice-Chancellor, Osmania University urged scientists, engineers, legal experts and social scientists to evolve measures to arrest environmental degradation. He was inaugurating the 14th National Convention of Environmental Engineers and a national seminar, "Environment Protection — Need of the Hour" in Hyderabad recently. He said that while on the one hand, rapid development in the fields of science and technology was being witnessed over the decades, on the other, serious damage was being caused to the environment.

"The common man will have to pay a heavy price if the present level of environmental degradation goes unchecked. It is the responsibility of one and all to ensure that mother earth is not subjected to unscientific and irrational exploitation," he added.

Referring to several laws enacted to prevent environmental degradation, he regretted that the people, instead of adhering to these laws, were blatantly violating them.

"Osmania University has set up a Centre for Environmental Protection and proposes to introduce environmental engineering at undergraduate and postgraduate levels," he said.

Speaking on the occasion, Mr. K.N. Majumdar, Chairman of the Environmental Engineering Division Board of the Institution of Engineers (India), called upon engineers and scientists to guide the people and policy-makers in making the earth a better place to live in.

"The time has come to evolve measures for tackling man-made hazards," he said, adding that indiscriminate use of natural resources and misuse of tools available due to scientific advancement had led to a point where development was no longer possible without adversely affecting the environment.

Regarding the role of the IEI in curbing environmental degradation, he said the Institution had made it mandatory for its members to render assistance for environmental protection.

REC-IBM Sign MoU

The Regional Engineering College, Tiruchi is reported to have signed a memorandum of understanding (MoU) with the International Business Machines (IBM) for establishing a Rs. 10-crore information technology centre in the college campus. This was revealed by Dr. P. Aravindan, Principal, in Tiruchi recently.

He said that the IBM would instal a sophisticated mainframe, and under a Rs. 30 crore scheme, a teaching and learning resource centre which could be accessed through Internet. A digital library would be organised where the teaching expertise of various branches of study offered by the REC would be offloaded for the benefit of students, research scholars, and teachers. The faculty from various universities and colleges in the country, and also from 10 foreign universities would collaborate in the project. A group of students from Malaysia had already sought access to the dig-

ital library. Under the system, students from any part of the world could derive the benefit of expert teaching in various subjects.

Dr. Aravindan said the science and technology park being set up on a 50 acre site in the REC campus and the Indo-U.K. project on energy would be associated with the programme. Video-conferencing would be arranged at the centre which would serve as a nodal agency for higher education in this part of the country.

Presiding over the valediction of a skills-cum-technology upgradation programme for fabrication industries, sponsored by the Small Industries Development department of the REC, Dr Aravindan stressed the need for revision of the syllabus in technical institutions to suit modern demands of industry. There was nothing wrong, he said, in educational institutions interacting with industries to solve their problems and upgrade technology. He regretted that this trend of active interaction was not gathering momentum in the country. Only when young minds were allowed to grapple with problems assailing industry, would new ideas and technologies emerge.

He stressed the need for providing quality education from the primary to the university level, and added that in recent times, even the rural folk were prepared to pay for quality education. Unless manufacturing technology changed along with the growth of new ideas of production and management, industrial units in our country would lose their competitive edge, he said.

Seminar on Sri Aurobindo

A national seminar on "The Philosophy and Yoga of Sri Aurobindo", to commemorate his 125th birth anniversary and the golden jubilee of India's Independence, was recently held at Kurukshetra University. The seminar, sponsored by the Haryana Government and organised by the English Department of Kurukshetra University, was inaugurated by noted Aurobindo scholar and president of Dharam Hinduja International Centre of Indic Research, Prof. Kireet Joshi.

Dr. Joshi spoke of Sri Aurobindo as an "adventure of consciousness" and underscored his search for "spiritual force" which imbued not only his quest for India's freedom but which could be practically applied to the political struggle and, on a more wider sphere, to resolve the problems of human existence and harmony.

"The life and works of Sri Aurobindo are a living testimony of his victorious opening of the gates of a new power, and by means of summarising in himself the luminous results of all the best of the past systems of yoga as also by developing a new yoga, he came to build up new knowledge that humanity needs for its future development and fulfilment. It has, therefore, been rightly said that Sri Aurobindo does not belong to the past nor to history but to the future that is realising itself," he observed.

If one seriously studies Sri Aurobindo, one would become a participant of that adventure of consciousness which "invites us to collaborate with that wide-ranging supramental yoga that can liberate us from the fetters of dogmas and preconceptions and inspire us

to realise the highest and the best not only for ourselves but also for the entire humanity," he further added, quoting extensively from the works of the Master including his magnum opus, "The Life Divine", "The Synthesis of Yoga" and "The Essays on the Gita" to mention a few.

In his keynote address, Dr. S.P. Singh, Director of the Dharam Hinduja International Centre of Indic Research, dwelt at great length on the integrality of Sri Aurobindo's Vedanta Yoga which emphasised not only personal salvation but also for the entire human race.

In his presidential remarks, the Vice-Chancellor, Dr. M.L. Ranga, emphasised the relevance of the pragmatic truth enshrined in the Gita and the philosophy of Sri Aurobindo. He asserted that the integral and humanitarian approach propounded by Sri Aurobindo was the only solution to the social problems confronting the nation today.

The seminar was attended by a large number of participants from various colleges and universities.

IIT-Delhi Convocation

"All the skills that you have acquired here are effective only if you learn to manage men — unfortunately, no known process of education can teach you this and only you and your experience are your real teachers — as long as you are sensitive to human nature, you cannot fail" said Mr. Keshub Mahindra, an industrialist and Chairman of Mahindra and Mahindra Limited. He was delivering the convocation address at the Indian Institute of Technology (IIT) in New Delhi recently.

In his convocation address titled "India-On Stage," Mr.

Mahindra stated that India's problems were "population, poverty and illiteracy" and that "every citizen is responsible for what happens in the country". As no education can comprise only teachers, no government can comprise only rulers, he pointed out.

"When Watt invented the Steam Engine, he substituted mechanical power for animate muscle power. Thus began the industrial revolution. It was education, the use of technology and hard work that caused profound changes in the Western world and they earned a quality of life far beyond their dreams. They deserve it for they earned it. So shall we if we educate our people, use technology and work hard. Our lives will change and for the better", the industrialist stated.

"There is an urgent need to create confidence in the country and one of the ways to achieve this is for Government to give clear cut direction on their vision of the economy", Mr. Mahindra observed and added that "the Centre has to redefine its role and concentrate on issues of national security, law and order, be transparent, and accountable in its governance"

In his address, Mr. Vijay Kirloskar, felt that "for the best in India to consider that their destiny lies in the United States is a fallacy. We should acquire all essential skills and learn all that we can from the institutions in that country with the intention to apply that learning for the benefit of our country and for the betterment of the quality of life of all Indians"

Mr. Kirloskar stated that the national entities should work out an action plan that places in focus what shall be the needs of the

country in the next millennium. They should utilise the faculties and graduates from schools of higher learning that would in combination provide India with the proficiencies and that would help in the realisation of the rich potential that it possesses.

He exhorted the graduating students "to strive to ensure that the impact of our colonial past is truly behind us and we as a nation come to achieve the excellence that is rightfully ours".

Prof. V.S. Raju, Director of IIT Delhi, in his address, informed that "in a recent survey of Asia Week under the category of Science and Technology Universities in the Asia Pacific region, IIT Delhi is placed number two. Our endeavour is to be on top but the challenge is that as compared to the institutions in the developed countries we have much less financial and material resources".

Prof. Raju stated that the Institute had concluded a major research collaboration with Applied Materials of the US in the area of integrated circuit and thin film technology. "Over the last three-and-a-half years, we have received industry and alumni support to the tune of Rs. 20 crores," he said while at the same time making an impassioned plea for greater industry-academia interaction.

Computer Applications in Manpower Planning

The Institute of Applied Manpower Research, New Delhi proposes to organise a Training Programme on Computer Applications in Manpower Planning on September 14-18, 1998.

The programme aims to : discuss the issues in manpower

planning; enable the participants to develop appreciation of computer applications in manpower planning; develop insight and skills in management of large information system through computers; discuss various software packages used in various processes of manpower planning; discuss computerisation for office automation and productivity; and discuss managerial applications of computers.

The course contents include Manpower planning : concepts and techniques; Computer applications in manpower planning; Software packages for manpower planning; Manpower planning through computers at the organisational level : A Case; Manpower information system; Management of large information system through computers : A case of NTMIS; Personnel computers for managers; Office automation and productivity; and Manpower management through computers.

The programme will be useful for the officers from the Departments of Science and Technology, Planning, Education, Employment and Training, Health and other development departments and also for the executives of public and private sector organisations, research, academic, banking and financial institutions.

Further details may be had from Head (Training), Institute of Applied Manpower Research, Indraprastha Estate, (Opp. Indira Gandhi Indoor Stadium), Mahatma Gandhi Marg, (Ring Road), New Delhi-110 002.

Indian Varsities on Web

The Education Wing of Consulate General of India, New York has launched a web site

containing the names, addresses and contact numbers of the universities/institutions in India. The web site has special features of making the request to update the information, hyperlink the web site of the listed institutes against their name and also sending the e-mail of these institutes by just clicking the icon of the e-mail address, which is in blue in colour, of the university on the web site itself.

The universities/institutions are advised to update the information regarding their address, telephone number, fax number, e-mail and web site etc by clicking the update icon on the site.

The web site can be visited at the following address : <http://www.indiaserver.com/univ>

FID Conference & Congress

The last date for early registration for 49th FID Conference and Congress (1998), Jaipur and New Delhi, 11-17 October, 1998 has been extended to 15th September, 1998. The event is being hosted by the Indian National Scientific Documentation Centre, New Delhi.

Best Institution Award 1997

The Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri has received the 'Best Institution Award for the year 1997' This national level award has been bestowed upon the Vidyapeeth by the Indian Council of Agricultural Research, New Delhi, in recognition of the outstanding contributions of the Vidyapeeth in the fields of education, research and extension education, in its three faculties, namely, agriculture, veterinary and fisheries. The Award carries a plaque and a cash prize of Rs. One Lakh.

News from Agricultural Universities

Training Programme on Rice Production

An increased concern for soil and crop needs, and widespread introduction of new rice varieties, were likely to change existing methods of intensive rice cultivation, said Dr. A. Abdul Kareem, Vice-Chancellor, Tamil Nadu Agricultural University (TNAU). He was delivering the keynote address at the inauguration of a training programme on rice production, jointly organised by the Indian Council of Agricultural Research (ICAR) and the Soil and Crop Management Studies (SCMS) and the Centre of Advanced Studies in Agronomy (CASA) of TNAU.

Dr. Kareem said that in the coming years, farmers would cultivate "new generation" rice varieties with a yield potential of 13 to 15 tonnes per hectare. In addition, farmers would opt for mechanised farming, diversify cropping systems, reduce irrigation needs, improve nutrient-use efficiency, balance the use of micro-nutrients, and reduce the use of insecticides.

Though food production in the country had quadrupled since Independence, agricultural scientists should now carry out a "constraint analysis" to pick out factors that might adversely affect food production in the coming years.

He said that a "zero-level reproductive rate" might become a reality in 10 to 15 years from now, but food production would have to increase until the population stabilised.

In India, the demand for rice during 1991 was 71 million tonnes, and this demand was likely to go up to 87 million tonnes by the turn of the century, and climb further

to 107 million tonnes by 2010.

Any production in the future would have to come only from increased yields, because the area under crops was likely to decline, and farm labour might become scarce owing to industrialisation and urbanisation.

Dr. Kareem said that the productivity of rice had improved in the country during every successive plan period, with the average all-India yield of rice climbing from 771 kg per hectare in 1949-50, to 1471 kg per hectare in 1986-87.

UAS Plans Course on Food Science & Technology

The University of Agricultural Sciences (UAS), Bangalore proposes to introduce a four year course on food science and technology from the next academic year. This was

announced by the Vice-Chancellor of the University Prof. S. Bisliah.

Speaking at the valedictory function of 50 years of India's independence held recently at the university campus at Hebbal, he said that measures would be taken to improve the quality of education by solving the administrative and financial problems facing the departments.

In order to achieve self-sufficiency, grants of Rs. 40 crore would be disbursed for various university development projects. The university would also grant concessions to students, who have obtained their degrees to attend competitive examinations like KAS and IAS and other orientation programmes, he added.

The University's branches at Mandya, Shimoga and Mudugere would be strengthened to facilitate development and research projects, he said and added that research into GB 28 Ragi, maize and hybrid paddy was under way.

News from UGC

Human Rights Courses in Varsities

The University Grants Commission (UGC) is reported to have drawn up plans for introduction of human rights (HR) courses in the universities at the postgraduate, diploma and certificate course levels.

According to the UGC's related paper on the Ninth Plan Approach to Promotion of Human Rights Education (HRE) in universities & colleges, a total sum of Rs. 1.5 crore has been set aside for introduction of master's degree course in 10 universities, diploma course in 25 universities and certificate course in five universities. However, the earmarking has been

done under the existing scales of pay.

The paper itself states, "Obviously, this level of funding is much too inadequate for countrywide HRE initiatives. This inadequacy will get accentuated with the revision of salary scales in universities and colleges." Additional funding is expected to be generated from the Planning Commission, since HRs are elemental to development, and international funding agencies like the World Bank, UNESCO etc.

The break-up of the earmarked annual funding has been in the following manner. For intro-

duction of the course, a total of Rs. 75 lakh per annum has been allocated. The corresponding figures for the conduct of seminars/workshops in universities and colleges have been fixed at Rs. 60 and Rs. 15 lakh respectively.

For a department to be considered for the UGC's special assistance for the purpose of starting a PG course, it must establish that the PG department of Law/Political Science or in any other discipline is already a well-established one in terms of cadre strength, infrastructure and teaching, research and extension activities. The department should have a strength of at least five full time teachers including professors and readers. It must subscribe to at least five journals (Indian and overseas) and other reports, besides basic literature in the disciplines taught and actively involved in HR teaching or research.

For starting a two-year LL.M./M.A. course in HR, the department would be given one professor or a reader and one lecturer, a one-time grant of Rs. 1 lakh for books and a Rs. 30,000 grant each for journals and extension work.

The prevailing state of HRE, in the UGC's opinion, has left much to be desired. No college in the country has any HR course at the under-graduate level. At this level, HRE is given in the law faculties as a limited component in the papers on the International Law and Indian Constitutional Law (fundamental rights). Only the National Law School University, Bangalore (NLSU), offers a full paper on HRs for LL.B.

In the university departments of political science, it forms a still limited part of the papers on the Constitutional and Political Development of India (fundamental rights) and International Politics (United Nations).

A Research Grant amounts to a maximum of US\$10,000.00 — and is normally provided for a period of one year. Requests for additional grants to allow for an extension of a successful project will be considered by the Academy, subject to the submission of a satisfactory final report on the previous grant.

A grant may be used to purchase scientific apparatus, consumable materials, specialized literature and other items needed for the project which are not obtainable locally. The grant does not cover salaries and travel expenses.

Personal computers are normally not covered under this scheme, except in very exceptional cases where the need is fully justified.

The Research Grants programme provides support for research projects in the fields of basic sciences : Biology, Chemistry, Mathematics and Physics.

Applicants should be nationals of developing countries with an advanced academic degree and some research experience, and hold positions at universities or research institutes in developing countries. As a general rule the grants are normally awarded to young competent scientists (under the age of 45 years) from those developing countries where the basic tools of research are seriously lacking.

The last date for receipt of completed requests is 1st July and 1st December.

Further details may be had from M.T. Mahdavi (Mrs) Third World Academy of Sciences (TWAS) c/o The Abdus Salam International Centre for Theoretical Physics (ICTP) P.O. Box 586 — Via Beirut 6 — 34100 Trieste — Italy.

News from Abroad

TWAS Research Grants

The Third World Academy of Sciences (TWAS) Research Grants Programme in Basic Sciences was established in 1986 in response to the needs of promising young researchers in developing countries, particularly those attached to institutions that lack appropriate research facilities.

Under his scheme creative researchers in the South working in the fields of basic sciences are awarded grants to enable them to purchase the research facilities they need to enhance their productivity.

The purpose of these grants is to reinforce and promote scientific research in basic sciences in the Third World, to strengthen the endogenous capacity in science, and

to reduce the exodus of scientific talents from the South.

Research grants are awarded by the Academy for high-level and promising scientific research projects carried out by individual scientists in developing countries.

The TWAS Research Grants programme is generously supported by the Swedish Agency for Research Cooperation with Developing Countries (SAREC) and the Italian Government (through the Direzione Generale per la Cooperazione allo Sviluppo). The SAREC contribution is mainly intended to support research proposals from African countries and other developing countries badly in need of basic research tools.

BOOK REVIEW

A MIXED FARE

Amitabha Chatterjee*

Rawat, R.P., Gupta, O.P. and Venkatappaiah, V. Eds. Current developments in library and information science (Kaula Festschrift-3). 1998. New Delhi, Reliance Publishing House. Pp. xliv+787. ISBN : 81-7510-067-2. Rs. 895/-.

Prof. P.N. Kaula is a very well-known name in the LIS profession in India and abroad. An ardent disciple of Ranganathan, Prof. Kaula possesses a multifaceted personality. He has been a committed librarian, a master educator, a prolific writer and a tireless leader of the library movement of the country. Indeed, he has carved out a niche for himself in the LIS firmament by his immense contribution in every sphere of the profession. He has many firsts to his credit : He was the country's first full-time Reader in Library Science (at Delhi University), the first full-time Professor in Library Science after Ranganathan (at Banaras Hindu University), first professional on whose work a D.Litt degree has been awarded (at Utkal University), and so on. He is also the first professional in whose honour as many as three festschrifths have come out, the present one being the third.

This volume of over 800 pages contains 74 papers (and not 76 as claimed) by his professional colleagues, students and admirers from the country and abroad. The papers are arranged under 29 themes of varied nature and are preceded by a few photographs of

Prof. Kaula taken on different occasions and an introduction listing in brief his contributions and providing a conspectus of the festschrift. The 'Contents' running into 28 pages enumerate not only the titles and authors of the papers but also all sections and subsections of each paper. Possibly, an abstract at the beginning of each paper would have been a better substitute to such enumeration of sections and subsections for giving the readers an idea about the contents of the concerned paper in nutshell. What is intriguing is the absence of three appendices, viz., (1) Honours and Awards, (2) Felicitation Address and (3) Main Source Material, though they are mentioned at the end of the contents.

The title of the volume is general enough to cover all aspects of LIS. This is perhaps the reason why the papers on so many varied subjects have been contributed. Since earlier festschrifths had also covered topics of varied nature, this could have been better planned as a compact volume on an area of current interest. Such a volume would have served as a monograph or handbook on the subject concerned and would have been of use for a longer period.

It is obviously difficult to review, within a short span, each

individual paper of a collection of such a magnitude. But it must be said that some of the papers are quite well-written (such as Paper-G2, Paper-G3, Paper-M1, Paper-N1, Paper-O1, Paper-P1, Paper-Q2, Paper-T1, Paper-U2, Paper-X1 and Paper-ZC3). Some papers are unusually long, such as Paper-E2 (31 pages) and Paper-T1 (25 pages). On the other hand, some are unusually brief or sketchy, such as Paper-A5, Paper Y1, Paper-ZA4 and Paper-ZA8. Some papers again can hardly be called articles; they should better be called reports, such as Paper-E1, Paper-ZC1 and Paper-ZC8, and hence could be grouped in a separate section. Besides, one paper, viz., Paper-E2 eulogises the role of another professional and not Prof. Kaula. Such a paper would have been better suited for a volume in honour of the professional concerned.

As is natural, the volume contains some personal tributes to the man being honoured and some pieces depicting his relationship with his illustrious guru Ranganathan. The number of such contributions is 22 which are grouped under four themes. In fact the number is more since some of the papers depicting Prof. Kaula's role in different fields are scattered under other themes. That means that more than one-third of the papers are of this nature. This, though on the one hand, speaks of the popularity of Prof. Kaula, on the other, it takes the lion's share of the volume. There are obviously repetitions of fact at many places and except in a few papers, such as Paper-ZC3, in which objective

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efforts have been made to assess some definite aspects of the man, rest are more emotional. In this context, it is felt that a few well-written papers, each on different facets of the man, such as Prof. Kaula as a teacher, Prof. Kaula as a librarian, Prof. Kaula as a disciple of his guru, Prof. Kaula as a man, Prof. Kaula as an author and editor, Prof. Kaula as a leader of the profession, etc would have brought to light his versatility and contributions in a better fashion.

Mention may also be made here of some discrepancies and inconsistencies that have crept into the volume. Firstly, the headings of some of the papers are either not clear or do not convey their exact scope, such as the headings of the papers A3, G1, H1, K1 and U2. Secondly, some papers are not placed under proper themes, such as papers D1, E1, E3 and T1. Thirdly, bibliographical references do not always follow a consistent citation pattern. Further, in one case (Paper-G4) references are completely missing, though the text mentions the serial numbers of such references, while in another case (Paper-H1), there are two different sets of references which create confusion.

Besides several printing mistakes and mistakes in running titles at different places, there are a few omissions and duplications too, e.g. on page-84 there is a caption of a picture, but the picture is missing; on the other hand, a paper entitled 'The Great Guru Kaula — my experiences as a student' by D.C. Ojha has appeared twice (Paper-ZA8 and Paper ZB3) under two different themes.

On the whole, the book presents a mixed fare, but the discerning will certainly be able to find out the gems.



Indira Gandhi National Open University

Schedule of Telecast for the period 1st to 30th September, 1998
6.30 a.m. to 7.00 a.m.

Day/Date	Academic Prog.	Title
1.9.98 Tuesday	Bachelor's Degree Programme	Sampling — A Case Study
2.9.98 Wednesday	Diploma & Certificate Course	Basti Sevika — An NGO Experience
3.9.98 Thursday	Diploma & Certificate Course	Basti Sevika — Ek Anubhav
4.9.98 Friday	Management	Developing a National Level Advertisement Campaign
7.9.98 Monday	Bachelor's Degree Programme	Partichayan — Vishay Adhyayan
8.9.98 Tuesday	Bachelor's Degree Programme	Radio Play
9.9.98 Wednesday	Diploma & Certificate Course	Voluntary Health Association of India — An Introduction
10.9.98 Thursday	Diploma & Certificate Course	Incidence & Management of Nutritional Deficiency Disorders
11.9.98 Friday	Management	Marketing of Services — Destination India Radio Natak
14.9.98 Monday	Bachelor's Degree Programme	Writing News for Radio
15.9.98 Tuesday	Bachelor's Degree Programme	Communication in the Office Pt. I
16.9.98 Wednesday	Diploma & Certificate Course	Communication in the Office Pt. II
17.9.98 Thursday	Diploma & Certificate Course	Growth & Stabilisation Strategies for SSE
18.9.98 Friday	Management	Radio Samachar Lekhan
21.9.98 Monday	Bachelor's Degree Programme	Translating Tagore
22.9.98 Tuesday	Bachelor's Degree Programme	Communication in the Office Pt. III
23.9.98 Wednesday	Diploma & Certificate Course	Office and the Computer Pt. I
24.9.98 Thursday	Diploma & Certificate Course	Privatisation — The Indian Strategy
25.9.98 Friday	Management	Translation as a Profession
28.9.98 Monday	Bachelor's Degree Programme	Natyauvad Prastuti ki Samasyayen
29.9.98 Tuesday	Bachelor's Degree Programme	Office and the Computer Pt. II
30.9.98 Thursday	Diploma & Certificate Course	

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

AGRICULTURAL AND VETERINARY SCIENCES

Forestry

1. Jha, Kaushalendra Kumar. Structure and functioning of an age series of teak (*Tectona grandis* Linn.) plantations in Kumaun Himalayan tarai. (Dr R P Singh), Department of Forestry, Kumaun University, Nainital.

BIOLOGICAL SCIENCES

Botany

1. Anil Kumar. Studies on in vitro propagation, biochemistry and field evaluation of two economically important plants : *Rosa damascena* mill. and *gladiolus*, spp. (Dr Uma T Palni), Department of Botany, Kumaun University, Nainital.

2. Joshi, Asha. Competitive influence on dry mass production and resource use in the seedlings of different habitats. (Dr S P Singh), Department of Botany, Kumaun University Nainital.

3. Joshi, Beena. Phenology productivity, nutrient allocation and water stress in *quercus floribunda* seedlings in Central Himalaya. (Dr Y S Rawat), Department of Botany, Kumaun University, Nainital.

4. Kapoor, Rupam. Vam in relation to growth and essential oil yield in umbelliferous plants. Department of Botany, University of Delhi, Delhi.

5. Kaur, Rajender. Studies on watermolds in relation to fish diseases and decomposition in Nanak Saga, Nainital. (Dr R D Khulbo), Department of Botany, Kumaun University, Nainital.

6. Reddy, R Swaroopa Ranu. Genetic improvement of sunflower (*Helianthus annuus* (L.) through tissue culture methods. (Dr B Prathibha Devi), Department of Botany, Osmania University, Hyderabad.

7. Sah, Sunil. Phytoeciology, growth rate and environmental response of epiphytic macrolichen vegetation in Ranikhet (Almora) Kumaun Himalayas. (Dr S C Sati), Department of Botany, Kumaun University, Nainital.

8. Sandhya Rani, R. Floral anatomy of tremendraceae and byblidaceae. (Dr M Radhakrishna), Department of Botany, Osmania University, Hyderabad.

9. Sardeau, Nageah. Cold adaptations in psychrotrophic rhizobium isolates from semiarid and subalpine Himalayan legumes. Department of Botany, University of Delhi, Delhi.

10. Shah, Vipin Chandra. Influence of clipping on two introduced fodder grasses. (Dr G C Joshi), Department of Botany, Kumaun University, Nainital.

Genetics

1. Balachandran, S M. Studies on genetic and environmental factors influencing anther culture response in rice. (Dr E A Siddiq), Department of Genetics, Osmania University, Hyderabad.

2. Venkateshwari, A. A study on the genetic and biochemical aspects of duodenal ulcer. (Dr Pratibha Nallari), Department of Genetics, Osmania University, Hyderabad.

3. Yadav, Jitender Singh. Polyamine-mediated regulation of somatic embryogenesis and lateral root differentiation in eggplant (*Solanum melongena* L.). Department of Genetics, University of Delhi, Delhi.

Molecular Biology

1. Gandhi, Rita. Developing transgene technology for oryza

- sativa* and *Arabidopsis Thaliana* and isolation of T-DNA tagged polypysetta mutant of a thaliana. Department of Molecular Biology, University of Delhi, Delhi.

2. Jain, Pradeep Kumar. Molecular genetic analysis of light signal transduction mutants, and sequencing and characterization of a light-regulated gene, *Pbs1* of *Arabidopsis thaliana*. Department of Molecular Biology, University of Delhi, Delhi.

Zoology

1. Archana Kumari. Ecdysteroids of *trogoderma granarium* everts and their inhibition in certain insects. Department of Zoology, University of Delhi, Delhi.

2. Dawar, Sangeeta. Physiology of photoproduction of hydrogen by photosynthetic microbes and its regulation. (Dr B K Behra), Department of Bio-Science, Maharshi Dayanand University, Rohtak.

3. Khanna, Taruna. Biochemical and immunological studies on buffalo pituitary thyroid stimulating hormone. Department of Zoology, University of Delhi, Delhi.

4. Pillai, Devika. Molecular evaluation of the expression of a fusion gene encoding the B-chain of heat labile enterotoxin of *E. Coli* and the B-subunit of human chorionic gonadotropin. Department of Zoology, University of Delhi, Delhi.

5. Prasad, Brijeshwar. Ecology of terrestrial molluscs in Kumaon Himalayan forests. (Dr P K Gupta), Department of Zoology, Kumaun University, Nainital.

EARTH SYSTEM SCIENCES

Environmental Science

1. Bala Rani. Isolation of cyanobact from salt affected soil and their utilization in bioreclamation of margin lands. (Dr Anubha Kaushik), Department of Bio-Science, Maharshi Dayanand University, Rohtak.

Geology

1. Tewari, Nirmal Kumar. Sedimentological investigation of the krol group in the Titkhet hills, northeast of Kotabagh, Kumaun lesser Himalaya. (Dr C C Pant), Department of Geology, Kumaun University, Nainital.

ENGINEERING SCIENCES

Electronics

1. Grover, Inderbir Kaur. Electrical and optical properties of tertiary butylphosphine doped N-type hydrogenated amorphous silicon. Department of Electronic Science, University of Delhi, Delhi.

Engineering

1. Parshad, Devi. Imparting flame retardancy to cotton and polyester viscose blended fabrics. (Dr J K Sharma), Department of Engineering and Technology, Maharshi Dayanand University, Rohtak.

Technology

1. Ali, Masahi. Studies on physico-chemical and mechanical behaviour of polymeric composite materials for engineering applications. Department of Technology, University of Delhi, Delhi.

2. Kumar, Devendra. Electrochemical, optical and thermal studies on conducting polyanilines. Department of Technology, University of Delhi, Delhi.

MATHEMATICAL SCIENCES

Mathematics

1. Annapurna, Kamaraju. On translation planes of order 3. (Prof K Satyanarayana), Department of Mathematics, Osmania University, Hyderabad.
2. Arora, Kewal Krishan. On certain properties of banach spaces with projectional of the identity. Department of Mathematics, University of Delhi, Delhi.
3. Dwivedi, Jai Prakash. A study of some differentiable manifolds and their submanifolds. (Dr S B Pandey), Department of Mathematics, Kumaun University, Nainital.
4. Gupta, Sudha. Various generalizations of convex functions in mathematical programming. Department of Mathematics, University of Delhi, Delhi.
5. Srivastava, Satish Kumar. Certain relativistic and non relativistic applications in astrophysics and cosmology. (Dr Ratna Joshi), Department of Mathematics, Kumaun University, Nainital.
6. Shapit, Azaya Bikram. Some contributions to the finite population sampling. Department of Statistics, University of Delhi, Delhi.

Statistics

1. Juneja, Atul. Statistical study of the risk factors associated with cervical neoplasia and selective cytology screening approaches. (Dr R K Tuteja), Department of Statistics, Maharshi Dayanand University, Rohtak.
2. Prakash, M Ravi. Sequential nonparametric estimation of regression function (fixed design). (Dr Y S Ramakrishnaiah), Department of Statistics, Osmania University, Hyderabad.

MEDICAL SCIENCES

Nursing

1. Sharma, Asha. Effectiveness of auto and agent-initiated instruction for developing self-care ability in non-insulin dependent diabetes mellitus patients. Department of Nursing, University of Delhi, Delhi.

PHYSICAL SCIENCES

Chemistry

1. Arora, Veena. Synthesis and spectral studies of Mn(II) Fe(III), Ni(II), and Cu (II) Metal Ion complexes with benzimidazole based flexible bidentate ligands. Department of Chemistry, University of Delhi, Delhi.
2. Babu, B Ravindra. Studies on lewis acid mediated reactions and novel natural products. Department of Chemistry, University of Delhi, Delhi.
3. Ballabh, Kanti. Uranium (vi) and thorium (iv) complexes of some N (O-hydroxy substituted (OR-H) benzyl-amine acids. (Dr M Chandra), Department of Chemistry, Kumaun University, Nainital.
4. Bist, Jaswant Singh. Extraction and estimation of transition metal ions using immobilized and adsorbed chelating agents on polymeric supports. Department of Chemistry, University of Delhi, Delhi.
5. Chopra, Haritma. Kinetics and mechanism of complexation reactions of metal ions with biochemical ligands. Department of Chemistry, University of Delhi, Delhi.
6. Gambhir, Geetu. Chemistry of 2-styrylchromones and 4-styrylcomarins. Department of Chemistry, University of Delhi, Delhi.
7. Jha, Amitabh. Novel constituents of piper orgyrophylum and studies on 1, 3-dialylprop-2-enones. Department of Chem-

istry, University of Delhi, Delhi.

8. Joseph, Sherly. Investigations on the chelation behaviour of anti-aids chelators. Department of Chemistry, University of Delhi, Delhi.
 9. Kataria, Sangeeta. Condensed bridgehead nitrogen heterocyclic system. (Dr Jag Mohan), Department of Chemistry, Maharshi Dayanand University, Rohtak.
 10. Krishnudu, K R. Synthesis of bio-active natural products from carbohydrates. (Dr C V Madhavasharma) Department of Chemistry, Osmania University, Hyderabad.
 11. Kumar, Naresh. Phytochemical investigations of Piper species and synthetic studies on novel heterocyclic compounds. Department of Chemistry, University of Delhi, Delhi.
 12. Madhavi, P. Synthesis of biomolecules : Approaches towards the total synthesis of sorangicin. (Dr Haribabu Mereyala), Department of Chemistry, Osmania University, Hyderabad.
 13. Rajesh. Synthesis and characterization of transition metal complexes with polydentate benzimidazole based ligands. Department of Chemistry, University of Delhi, Delhi.
 14. Rao, M Venkateswara. Enzymes as biocatalysts in the synthesis of biologically significant compounds. (Dr Ahmed Kamal), Department of Chemistry, Osmania University, Hyderabad.
 15. Reddy, G Vidyasagar. Studies directed towards the synthesis of (-)-Anisomycin and HIV protease inhibitors. (Dr D S Iyengar), Department of Chemistry, Osmania University, Hyderabad.
 16. Rizvi, Syed Asar Askari. Constituents of umbelliferae plants. (Dr K S Khetwal), Department of Chemistry, Kumaun University, Nainital.
 17. Singh, Sankha. Some new redox reactions in organic synthesis and their mechanistic investigations. Department of Chemistry, University of Delhi, Delhi.
 18. Singh, Vaishali. Kinetics and mechanism of condensation reactions of substituted phenols with carbonyl compounds in different media. Department of Chemistry, University of Delhi, Delhi.
 19. Thakur, Lahtesh Kumar. Solubilization of fatty acids and other food ingredients in micellar systems. Department of Chemistry, University of Delhi, Delhi.
 20. Umesh Kumar. Thermodynamics of molecular interactions in binary mixtures of non-electrolytes. (Dr K C Singh), Department of Chemistry, Maharshi Dayanand University, Rohtak.
- ### Physics
1. Bera, Kakoli. Effect of different dynamical modes on the physical properties of fullerenes and positron annihilation in quantum rare hot plasma. Department of Physics and Astrophysics, University of Delhi, Delhi.
 2. Bhargava, Sanjay. Laser spectroscopy of some diamond and diamond like carbon thin films. (Dr H D Bishht), Department of Physics, Kumaun University, Nainital.
 3. Jain, Meena. Study of atmospheric minor constituents with special reference to ozone. Department of Physics and Astrophysics, University of Delhi, Delhi.
 4. Kakarya, Rabinder Nath. Experimental and theoretical studies on macromolecules. Department of Physics and Astrophysics, University of Delhi, Delhi.
 5. Preveen, Kumar D. Some studies of gravity waves and tropical waves in the Indian region. Department of Physics and Astrophysics, University of Delhi, Delhi.



**SREE CHITRA TIRUNAL INSTITUTE FOR
MEDICAL SCIENCES & TECHNOLOGY**
THIRUVANANTHAPURAM-695 011
(An Institute of National Importance)

ADMISSION NOTICE

ACADEMIC SESSION COMMENCING : JANUARY 1999

Applications in the prescribed form are invited for admission to the following Academic Programmes of the Institute

A. DM/M.Ch Courses

No.	Course	Duration	Seats	Basic Qualification
1.	DM Cardiology	3 yrs	4	MD General Medicine or Paediatrics.
2.	DM Neurology	3 yrs	4	MD General Medicine or Paediatrics Also MD Psychiatry with 6 months residency posting in General Medicine/Neurology.
3	DM Neuro-Radiology	3 yrs	1	MD/DNB in Radiology/Radio diagnosis
4	M Ch Cardiovascular & Thoracic Surgery	3 yrs	4	MS General Surgery
5	M Ch Neurosurgery	3 yrs		MS General Surgery
6	M Ch Neurosurgery	4 yrs (+)	3	(+) MBBS with one year post house surgery in General Surgery
B. Post Doctoral Certificate Courses				
7.	Cardiovascular & Neurosurgical Anesthesiology	1 yr	6	MD Anaesthesiology
8	Neuro & Vascular Radiology	1 yr	1	MD/DNB Radiology
9	Vascular Surgery	1 yr	1	MS General Surgery
C. Master's Course				
10	Master of Public Health	18 months	Upto 15 Seats	MBBS, Engineering, Veterinary, Nursing graduates and postgraduates in social sciences, nutrition and allied specialties
D. Diploma/Certificate Courses				
11.	Cardiovascular and Thoracic Nursing	1 yr	10	B Sc Nursing or GNM with One year experience and registration with State Nursing Council.
12	Neuro Nursing	1 yr	10	-Do-
13	Diploma in Cardiac Laboratory Technology	2 yrs	3	B Sc. Physics 60% marks (main/sub)
14	Diploma in Operation Theatre Technology	2 yrs	2	Diploma in Electronics Biomedical Eng/Instrumentation
15	Diploma in Neuro Technology	2 yrs	3	B Sc Physics 60% (main/sub)
16	Diploma in Advanced Medical Imaging Technology	2 yrs	3	CRA/Equivalent
17	Diploma in Clinical Perfusion	2 yrs	1	B Sc Biological sciences 60% marks
18	Diploma in Medical Records Science	2 yrs	2	B Sc Zoology, Botany, Statistics (main)
19	Certificate in Blood Banking Technology	1 yr	2	B.Sc Zoology 60% marks (main/sub)

Note : Reservation of seats for courses 10 to 19 for SC/ST as per Government of India norms. Candidates belonging to SC/ST and are applying for Diploma/Certificate courses are required to secure only 50% in the qualifying examinations

General Information

Upper age limit as on 1st January 1999 is 35 years for DM/MCh, PDCC Courses and Nursing Courses and 25 years for Diploma and Certificate courses, relaxable by 5 years, for ex-service personnel with a service of not less than 5 years, SC/ST and sponsored candidates.

Candidates with more than two failures in the University or equivalent examinations are not eligible for admission. Admission will be based on the candidate's previous academic record and their performance in the selection tests to be held in the Institute during November 1998.

Those selected, excepting MPH scholars, will be paid stipend as fixed by the Institute. In the case of MPH scholars, tuition fee will be charged at rates as for the MBA programme at the Indian Institutes of Management. All scholars will be provided with accommodation as per Institute's rules.

Prescribed forms for application and Prospectus can be obtained by a written request accompanied by a Bank Draft or Rs 400/- in case of doctoral and MPH Programmes and Rs 150/- for other programmes drawn in favour of SCTIMST, Thiruvananthapuram-11 payable at Thiruvananthapuram. The request should contain the name and address of the candidate, Course to which admission is sought and details of the Demand Draft. Application forms are NON-TRANSFERABLE and candidates are not allowed to apply for more than ONE Course.

Last date for issue of application forms : 30th September 1998

Last date for receipt of completed forms : 5th October 1998

Request and Applications with incomplete information and those received after the last date are liable to be rejected. Further details can be had from the Prospectus.

Apply to :

The Registrar,

Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram-695 011 Kerala
Telephone : 0471-524649 Fax : 0091-471-446433 Grams : CHITRAMET

DIRECTOR

High School
10+2
Graduation
Post Graduation
Ph.D

7. Details of JRF/NET examination qualified.

Name of Organizer	Roll No	Year of examination
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8 Date of birth
(dd/mm/yy)

9 Details of Research experience

- (i) Have you published any Research Paper? Yes/No
If Yes, please indicate the number of papers published/accepted in the Standard referenced journals: (A) INDIAN (B) FOREIGN
A list of research papers published/accepted for publication should be attached. It should give, for each publication the title, names of all authors, name of journal, volume, number, year and pages. Enclose copies of the reprints and accepted papers. Photocopy of the letter of acceptance from the Editor should be enclosed for papers accepted for publication
- (ii) Presentation of Papers in Seminars, Workshops, Conferences (National/International)
(Attach details indicating the title of the paper presented, name of the Conference)
Teaching/Work Experience, if any,
(Indicate the number of years)
10. Title of Ph.D. Thesis
11. Proposed topic/s of research work to be undertaken during Part Time Associateship (detailed work plan/s to be attached)
12. Name the University/Department/Institution in which affiliation is sought for Part Time Associateship

13. Whether SC/ST or Physically Handicapped
(1 for SC 2 for ST 3 for PH 4 for General)
(Certificate to be attached)

14 Are you employed?
If yes:

Post held with Full name and Address of the Employee	Pay/ fellowship	Period from _____ to _____	Place of work	Nature of employment
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YES/NO

15. Any other relevant information :

I certify that I am not in receipt of any other award/fellowship/scholarship and the above particulars are correct to the best of my knowledge and belief

Signature of the Candidate

16 Certified that

- (i) I recommend the candidate for the award and undertake to guide/supervise him/her for the research work. General facilities required such as laboratories, equipment etc. are available in the department and will be provided to the applicant.
- (ii) No foreign exchange is required for taking up this project.
- (iii) This research proposal has not been submitted to any other agency for financial assistance

Signature, Name & Designation of Supervisor.

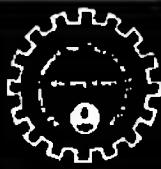
It is certified that the institution is recognized under the UGC Act (Sections 2 (f) 12 (B) and the guide/senior faculty member is authorized by the University to supervise the research work.

Necessary facilities are available and will be provided for the research work on the above topic during the tenure of the award.

Signature of the Head
of the Department with
Seal.

Signature & Name of Registrar/
Principal with Office Seal.

—davp 823 (10) 98



ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

I.G. STADIUM, I.P. ESTATE, NEW DELHI-110 002

New schedule for processing of proposals for starting new Technical Institution and/or introduction of new courses or programmes and/or variation in the approved intake capacity of courses or programmes.

Diploma and Under-Graduate (Degree) courses in Engineering & Technology, Architecture, Hotel Management & Catering Technology, Degree Courses in Pharmacy, Diploma Courses in Applied Arts & Crafts, Post-Graduate Degree courses in Management (MBA) and Computer Applications (MCA)

The All India Council for Technical Education (AICTE) has revised the schedule for processing of proposals for starting of new technical institutions and/or introduction of new courses or programmes and/or variation in the approved intake capacity of courses or programmes for the academic session 1999-2000.

The last date of receipt of the proposals by the AICTE, its Regional Offices, the State Govts., affiliating Universities and State Directorates of Technical Education, is August 31, 1998.

All those trusts/societies which had submitted proposals for the academic session 1998-99 but did not get the approval of the Council, may submit fresh proposal to be considered for the session 1999-2000. Please contact AICTE Headquarters or the AICTE's Regional Offices located at Bangalore, Bhopal, Calcutta, Chandigarh, Chennai, Kanpur and Mumbai for application forms and other details. Application forms are available on payment of Rs. 5000/- by Demand Draft drawn in favour of Member Secretary, AICTE, New Delhi payable at New Delhi.

Member Secretary
AICTE



Applications are invited for the following posts Qualification/experience requirements and pay scale are as prescribed by the University Grants Commission.

I] PROFESSOR

PROFESSOR OF SOCIAL WORK (one post) Essential Qualification Master's degree in Social Work Preferable Field/teaching/research experience in community development or social welfare administration

PROFESSOR OF SOCIAL SCIENCE/SOCIAL WORK (Two posts) Essential Qualification Master's degree in any of the following disciplines: Development Studies, Economics, Home Science, Political Science, Population Studies, Psychology, Social Work and Sociology Preferable Research/teaching/field experience in any of the following areas child, communications, education, family, social policy, urban studies, women and youth

II] READER

DEPARTMENT OF CRIMINOLOGY AND CORRECTIONAL ADMINISTRATION (One post). Essential Qualifications: (i) Master's degree in Social Work with specialisation in Criminology and Correctional Administration OR in lieu of the required specialisation, work experience in the field, teaching, research, field action/demonstration projects in the related area, and (ii) Ph.D. degree OR equivalent published work in the same field

UNIT FOR CHILD AND YOUTH RESEARCH (One post). Essential Qualifications (i) Master's degree in Social Work/ Anthropology/Population Studies, with research experience in the area of Child and Youth Research, and (ii) Ph.D. degree OR equivalent published work in the same field.

DEPARTMENT OF RESEARCH METHODOLOGY (One post) Essential Qualifications: (i) Master's degree in Social Work/Sociology/Psychology/Population Studies with experience in quantitative and qualitative research, and (ii) Ph.D. degree OR equivalent published work in the related field Preferable: (i) Experience of teaching research methodology including Philosophy of Social Sciences, (ii) Evidence of being actively engaged in research, (iii) Adequate exposure to various steps in Social Sciences/ Social Work research with experience in guiding M.A., M.Phil./Ph.D. level research, and (iv) Reasonably good command over concepts and techniques in Statistics and knowledge of computers.

DEPARTMENT OF FAMILY AND CHILD WELFARE (Two posts) Essential Qualifications: (i) Master's degree in Social Work with specialisation in Family and Child Welfare OR in lieu of the required specialisation, work experience in teaching research and field action projects in the areas of Family and Child Welfare, and (ii) Ph.D. degree OR equivalent published work in the same field

UNIT FOR LABOUR STUDIES (One post) Essential Qualifications: (i) Master's degree in Law with specialisation in Labour Laws OR Master's degree in Economics/ Sociology/Psychology with specialisation in Labour Economics/Industrial Sociology/Sociology of Labour/ Industrial Psychology with research experience in the labour related areas, and (ii) Ph.D. degree OR equivalent published work in the same field.

DEPARTMENT OF EXTRA MURAL STUDIES (Two posts)

Essential Qualifications: (i) Master's degree in Social Work/ Extension Education/Adult Education, and (ii) Ph.D. degree OR equivalent published work in the same field. Preferable: (i) Experience of organising national and international training programmes, and (ii) Research experience in carrying out evaluation of training programmes

DEPARTMENT OF PERSONNEL MANAGEMENT AND INDUSTRIAL RELATIONS (One post) Essential Qualifications (i) Master's degree in Personnel Management and Industrial Relations OR Master's degree or equivalent in Business/General Management with specialisation in Personnel Management and Industrial Relations OR Master's degree in Law with specialisation in Labour Laws OR Master's degree in Economics/Sociology/ Psychology with specialisation in Industrial Economics/ Industrial Sociology/Industrial Psychology, and (ii) Ph.D. degree OR equivalent published work in the same field

III] LECTURER

DEPARTMENT OF CRIMINOLOGY AND CORRECTIONAL ADMINISTRATION (One post) Essential Qualification Master's degree in Social Work with specialisation in Criminology and Correctional Administration

DEPARTMENT OF HEALTH SERVICES STUDIES (Two posts)

Post - 1 Essential Qualification Master's/M.D./M.Phil. degree in Hospital Administration/Management. Preferable Work experience in Hospital Management/Administration

Post - 2. Essential Qualification: Master's degree in Public Health/Community Health OR in Preventive and Social Medicine OR in Sociology/Anthropology Preferable Ph.D. in the field of Community Health

DEPARTMENT OF URBAN AND RURAL COMMUNITY DEVELOPMENT (One post) Essential Qualification Master's degree in Social Work with specialisation in Urban and Rural Community Development OR in lieu of the required specialisation, work experience in Community Organisation/Development or teaching/research in the same field.

DEPARTMENT OF MEDICAL AND PSYCHIATRIC SOCIAL WORK, (Two posts). Essential Qualification Master's degree in Social Work with specialisation in Medical and Psychiatric Social Work OR in a generic programme with field work/work experience, in the field of health.

UNIT FOR MEDIA AND COMMUNICATION (One post) Essential Qualification: Master's degree or equivalent Diploma in Film/Media production (preferably video) from a recognised University or Institute OR Master's degree in Social Work/Social Sciences with minimum two years practical experience in producing Social Work and Social Sciences related video programmes. The candidate should have familiarity with Media/Social Sciences research

ESSENTIAL REQUIREMENT FOR ALL LECTURERS

The candidates for the post of Lecturers should have qualified in the National Level / State Level Test (NET/ SET) conducted for the purpose by the UGC or any other agency approved by the UGC. However, those who have passed the JRF or have been awarded M.Phil/Submitted Ph.D. thesis upto 31.12.1993 are exempted from the requirement of passing the NET/SET.

IV] MANAGER (PUBLICATIONS) (One post) Essential Qualifications: (i) Master's degree in Social

Sciences/Literature/Journalism/Linguistics/Publishing (ii) All round experience of at least 6 to 8 years in publishing with capability for handling of editing, production, marketing and sales operations with leadership qualities to lead an established team, and (iii) Excellent public relations qualities with the capacity for liaisoning with academic staff

Age: Not above 50 years (5 years relaxation for SC/ST candidates)

V] INTERNAL AUDITOR (One post, reserved for SC)
Essential Qualifications (i) Post-Graduate degree from a recognised University with at least 55% marks or its equivalent grade, (ii) having cleared Subordinate Accounts Service Examination, and (iii) 8 years experience as Auditor in Central Government/State Government/Central/Deemed Universities/IITs/IIMs carrying a scale of pay of Rs. 2200-4000 (Pre-revised). In case a suitable person is not found at this level, the Institute may consider appointing a person as Assistant Internal Auditor (equivalent to Assistant Registrar's level) in the scale of Rs 2200-4000 (pre-revised) from among those who apply.

Age: Not above 50 years

VI] DEPUTY REGISTRAR (Two posts)

Post - 1 (reserved for ST) (On lien vacancy likely to be permanent) **Essential Qualifications.** (i) A post-graduate degree from a recognised University with at least 55% of the marks or its equivalent grade, and (ii) 8 years of experience as Lecturer in a College or a University with experience in educational administration, OR comparable experience in research establishment and other institutions of higher education, OR 8 years of administrative experience as Assistant Registrar or in a post carrying a scale of pay of Rs 2200-4000 (pre-revised) **Preferable Professional qualifications** in Public Administration/Maintenance (Estate) Management/Stores & Purchase etc

Age: Not above 55 years

Post - 2 Essential Qualifications (i) A Post-graduate degree, preferably M Com., from a recognised University with at least 55% of the marks or its equivalent grade, and (ii) 8 years of experience in Accounts and Finance as Assistant Registrar or in a post carrying scale of pay of Rs 2200-4000 (pre-revised) in Accounts or Audit office under government, educational or research institution or in a large commercial organisation of national standing with knowledge of accounting (including budget, audit and financing procedures) as required in the government organisation **Preferable:** Professional qualifications in Financial/Stores & Purchase/General Management etc

Age: Not above 50 years (5 years relaxation for SC/ST candidates)

VII] ASSISTANT REGISTRAR: (One post on lien vacancy likely to become permanent), **Essential Qualifications:** (i) Master's degree with atleast 55% marks or its equivalent grade (ii) 5 years experience in educational administration or comparable experience in research establishment and other institutions of higher education or 5 years of administrative experience in the pay scale of Rs 2000-3500 (pre-revised) and (iii) The candidate must be competent to do correspondence independently **Preferable Professional qualification** in Personnel General Management, Law etc.

Age: Not above 45 years (5 years relaxation for SC/ST candidates).

VIII] PRE-SCHOOL TEACHER (One post, reserved for Female ST) **Essential Qualifications** (i) HSC with

certificate/diploma in Pre-School Education OR Diploma in Education (equivalent to HSC) (ii) Experience in a Pre-School Education programme or in a short-term certificate/diploma course and (iii) Should be fluent in Hindi/Marathi and be able to teach in English The person will have to be in overall supervision of the Day Care Centre, including the Helpers and Co-ordinate the teaching programme

Age: Not above 35 years.

IX] TELEPHONE OPERATOR (One post), **Essential Qualifications** (i) SSC with certificate course in telephone operating. (ii) Experience on EPABX 10 + 100 Board (iii) Ability to speak and write Hindi/English fluently and (iv) Knowledge of Typing

Age: Not above 30 years (5 years relaxation for SC/ST candidates)

The prescribed application form, along with further details of qualifications, experience and age etc. for all posts can be obtained from the Section Officer (Personnel), either in person between 10.30 a.m. to 1.00 p.m. and 1.30 p.m. to 2.00 p.m. on working days (Monday to Friday) OR it can be obtained by post, by sending the application along with a self-addressed stamped (Rs 12/-) envelope, superscribed "Request for application form". An application fee of Rs 200/- for the post of Professor, Rs 150/- for the post of Reader, Manager (Publications), Internal Auditor and Deputy Registrar, Rs 100/- for Lecturer, and Assistant Registrar, and Rs 35/- for Pre-School Teacher and Telephone Operator has to be sent by Demand Draft drawn in favour of **Tata Institute of Social Sciences, Mumbai**. The details of specialisations and other requirements for the above posts can be obtained in person during the timings mentioned above, or by sending a self-addressed stamped (Rs 12/-) envelope to the Section Officer (Personnel). For SC/ST candidates application forms will be supplied free of cost on production of valid caste certificate

The completed applications together with copies of certificates should reach the Section Officer (Personnel) on or before 18th September 1998.

**Dr. S.K. Bandyopadhyay
REGISTRAR**

INDIAN INSTITUTE OF EDUCATION, PUNE

Applications are invited for the post of **DIRECTOR**, Centre for Educational Studies

1. Qualifications : i) Ph.D. in any Social Science, with experience in post-graduate teaching and guidance to doctoral research students under a recognized Indian University, ii) contribution to conceptual and/or applied research in education from social science standpoint, iii) books and/or research papers published in the context of (i) above, iv) Experience of participating in national/international meeting on policies, planning and management of education.

2. Age : Between 45 to 55 years (relaxable in special cases)

3. Emoluments : According to UGC scale for professors

Note : a) Applicants from communities entitled to the reserved category of posts should attach the necessary certificate to their applications

b) Application with detailed Curriculum Vitae, with specific reference to the required qualifications and expected salary should be sent through proper channels to Member-Secretary, Indian Institute of Education, J.P. Naik Path, Kothrud, Pune-411 029, Fax No 0212-335239.

4. Last date of application : Sept. 5, 1998.

CLASSIFIED ADVERTISEMENTS

THE GANDHIGRAM RURAL INSTITUTE DEEMED UNIVERSITY GANDHIGRAM-624 302, DINDIGUL DISTRICT, TAMIL NADU

Applications are invited for the following posts:

1. Registrar — One — Tenureless
2. Professor — One — In Computer Application
3. Director — One — In Adult Continuing Education and Extension
4. Reader — Each One — In a) English b) Mathematics c) Computer Application
5. Lecturer — Each One — In a) Mathematics (SC/ST) b) Computer Application (SC/ST)

The application form along with instructions to candidates can be had by sending Demand Draft drawn in favour of Registrar, Gandhigram Rural Institute for Rs. 20/- for each post dated not earlier than the date of the advertisement and payable at Canara Bank, Gandhigram or State Bank of India, Ambathurai. The demand draft should be accompanied by a self-addressed stamped envelope (20 cms x 10 cms) for Rs. 6/- The last date for receipt of filled up application is 11.09.1998.

- Note : i) The institute reserves the right to fill up or not any of the above posts
ii) Selection Committee reserves the right to recommend to fill up consequential vacancies arising out of the selection process
iii) Selection is on All India basis and only on merit
iv) On the above, the applicants who have applied earlier for the posts No. 2, 4 a, b, c and 5 a, b need not apply again.

Gandhigram-624 302

Date : 12.08.98

REGISTRAR

GUJARAT VIDYAPITH ASHRAM ROAD, AHMEDABAD-380014

Advt. No. 3/98-99

Applications for following posts are invited in prescribed proforma on or before 15-9-98.

1. Principal (4500-7300) Hindi Shikshak Mahavidyalay Candidates who have worked in basic education will be preferred.

Qualification :

- (1) A Master's degree with at least 55% marks or its equivalent.
- (2) Ph.D. or equivalent qualification.
- (3) 12 years' experience as a Lecturer/Senior Lecturer/Selection grade Lecturer/Reader of which at least five years must be at the level of Reader/Selection grade Lecturer.

OR
Comparable experience in a research establishment and/or other institutes of higher education

2. Professor (4500-7300) Social Work (Ninth Plan)

Qualification : An eminent scholar with published work of high quality actively engaged in research with 10 years of experience in post-graduate teaching and/or research at the University/National level institutions, including experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

3. Reader (3700-5700) Computer Science

Qualification:

- (1) M.Tech (CSE) with 5 years experience in computing OR
- (2) B Tech (CSE) with 7 years experience in computing OR
- (3) B Tech. (Non-CSE) with 8 years experience in computing OR
- (4) M Sc (Physical Sciences) with 8 years experience in computing OR
- (5) M Sc , DCA with 7 years experience in Computing OR
- (6) MCA with 7 years experience in Computing OR
- (7) Ph D with 5 years post Ph D experience in computing OR

4. Lecturer (2200-4000)

4.1 Hindi Shikshastra

4.2 Education (Distance mode)

One post reserved for SC & two posts for others

Qualification :

Good academic record with atleast 55% marks or an equivalent grade at Master's degree level in the relevant subject from an Indian University or an equivalent degree from foreign University (55% marks in M.A. & M.Ed)

Candidates besides fulfilling the above qualifications should have cleared the eligibility test for lecturers conducted by UGC, CSIR or similar test accredited by the UGC.

5. Assistant Registrar (2200-4000)

One post for SC/ST (fifth attempt) & one post for others (IX Plan)

Qualification : M.Com 55%, Experience of Accounts/Administration in University, Govt. or Semi-Govt. Institute at Supervisor level desirable

6. Technical Assistant (1400-2300)

Qualification : Graduate, P.G. Diploma in Audio/Video production.

Knowledge of Gujarati/Hindi essential
Application form can be available by paying cash Rs. 5/- or by M.O. Rs. 7/-.

Last date : September 15, 1998.

ACTG. REGISTRAR

INDIAN INSTITUTE OF SCIENCE BANGALORE-560 012

Applications are invited from Indian nationals preferably below the age of 35 years, for Faculty Positions at the level of Assistant Professor in the Department of Electrical Engineering. The candidates, if selected, are expected to contribute effectively in the teaching and research programmes of the Department which are generally in the areas of Power Systems, Power Electronics, Systems Science and Signal Processing

The candidates should have a Ph.D. degree with three years of experience (relaxable in exceptional cases), and an outstanding academic record, potential for independent research and academic leadership. Total emoluments at the minimum of the scale of Rs 3700-125-4950-150-5700 (the scale is under upward revision) are around Rs. 1,32,000/- per annum. Applicants may send curriculum vitae enclosing list of publications, important reprints, names of at least three referees with their address including Fax and e-mail address to Prof. Y.V. Venkatesh, Chairman, Division of Electrical Sciences, Indian Institute of Science, Bangalore-560 012 (India) within 2 months of this advertisement. The referees may be requested to send their assessment directly to Prof. Venkatesh (e-mail dcele@admin. iisc.ernet.in or Fax No 91-80 3348444/3342085). For further information please contact Chairman, Department of Electrical Engineering (e-mail vram@ee.iisc.ernet.in or visit the home page URL http://munchu.ee.iisc.ernet.in).

R(IA)308-22/98

REGISTRAR

Dated 12th August, 1998

ALIGARH MUSLIM UNIVERSITY ALIGARH (U.P.)

Advertisement No. 2-A/98-99

Dated : 01.08.1998

Applications on the prescribed form are invited for the following posts by 15.09.1998.

Number and nature of the posts may vary at the time of interview. The Selection Committee will be authorised to relax the prescribed qualifications if a highly qualified scholar is otherwise found suitable for the post. Higher initial start may be given to candidates possessing exceptional qualifications and experience.

Scale of pay

Professor Rs. 4500-7300 plus allowances
Reader Rs. 3700-5700 plus allowances

Lecturer : Rs 2200-4000 plus allowances
A. Faculty of Social Sciences/Arts/Science/
Life Sciences/Management Studies & Re-
search

1. Professor of Economics, Department of
Economics

Qualifications - Essential :

An eminent scholar with published work of
high quality actively engaged in research with
10 years of experience in Postgraduate teach-
ing and/or research at the University/National
Level Institutions, including experience of guid-
ing research at doctoral level.

OR

An outstanding scholar with established
reputation who has made significant contribu-
tion to knowledge.

2 Reader in English (In comparative, Lan-
guage and Literature interested in the af-
finites between the literature of Europe &
India), Department of English

3 Reader in Mathematics, (D.S.A.), Depart-
ment of Mathematics

4 Reader in Geology (Hydrogeology), De-
partment of Geology

5 Readers in Education, Department of Edu-
cation

6 Readers in Business Administration, Deptt
of Business Administration.

Qualifications - Essential :

Good academic record with a Doctoral De-
gree or equivalent published work Candidates
from outside the University system in addition
shall also possess atleast 55% marks or an
equivalent grade at the Master's Degree level.
Eight years experience of teaching and/or Re-
search, including upto three years for research
degree and has made some mark in the areas of
Scholarship as evidenced by quality of publica-
tions, contribution to educational renovation,
design of new courses and curricula.

7 Lecture in History, Department of History

8 Lecturer in Museology, Department of
Museology

9 Lecturer in Geology (D.S.A.), Department
of Geology

10. Lecturer in Statistics & Operations Re-
search, Department of Statistics & Opera-
tions Research.

Qualifications - Essential :

Good academic record with atleast 55%
marks or an equivalent grade at Master's de-
gree level in the relevant subject from an In-
dian University or an equivalent degree from a
foreign University.

Candidates besides fulfilling the above qual-
ifications should have cleared the eligibility test
for lecturers conducted by the UGC, CSIR or
similar test accredited by the UGC, provided that
Candidates who have submitted Ph.D. thesis or
passed the M.Phil. Examination by 31st Decem-
ber, 1993 are exempted from the eligibility test
for lecturers conducted by the UGC, CSIR or
similar test accredited by the UGC.

11. Lecturer in Business Administration, De-

partment of Business Administration

Qualifications - Essential :

A Master's degree in Business Administra-
tion or M.Tech. in Engineering with first class
with the provision that the incumbent would
acquire a doctorate degree within a period of
eight years.

12. CASE ANALYST, Department of Business
Administration.

Scale of Pay : Rs. 2200-4000 Plus allowances.

Qualifications-I-Essential :

Atleast high 2nd class Master's degree in
Management/Commerce/Economics/Technol-
ogy/Sociology/Psychology

II-Desirable :

1. Experience of case collection and writing,
teaching and research in management.
2. Supervisory/Administrative experience and
ability to assist in training and placement
activities

B : Faculty of Engineering & Technology

13 Professor of Architecture, Department of
Architecture

Qualifications-Essential :

- (i) Ph.D. with 1st Class degree at Bachelor's
or Master's level in Engineering & Tech-
nology
- (ii) 10 years experience in teaching/Industry/
research out of which 05 years must be at
the level of Assistant Professor or equiva-
lent

Note : Candidates from Industry/Profession
with recognised professional work of high
standard recognised at National/Internation-
al level, equivalent to Doctorate would
also be eligible

14 Reader in Civil Engineering (Foundation
Engineering), Department of Civil Engi-
neering

15 Reader in Chemical Engineering, Depart-
ment of Chemical Engineering

Qualifications-Essential :

- (i) First Class Master's Degree in appropriate
branch of Engineering/Technology
- (ii) Five years experience in teaching/industry/
research at the appropriate level

Note : Candidates from Industry/Profession with
recognised Professional work equivalent to
Master's degree would also be eligible

Desirable : Ph.D. degree in Engineering/Tech-
nology

16. Lecturers in Civil Engineering, Department
of Civil Engineering.

Qualifications-Essential :

1st Class Bachelor's Degree in Appropriate
Branch of Engineering & Technology.

C. Faculty of Medicine

17. Professor in Community Medicine, Depart-
ment of Community Medicine.

Qualifications-Essential

M.D. (Social & Preventive Medicine/Com-
munity Medicine) M.D. (Medicine) with D.P.H.

Teaching/Research Experience

As Reader in Social & Prev Medicine for
04 years in a Medical College.

18 Reader in Dermatology, Department of
Dermatology

Qualifications-I-Essential :

M.D. (Dermatology & Venereology)

M.D. (Medicine) with D.V.D., D.D.

Teaching/Research Experience :

As a lecturer in Venereology & Dermatol-
ogy for five years in a Medical College.

19 Lecturer (MOH), Rural Health Training
Centre, Jawan, Department of Community
Medicine.

Qualifications-I-Essential :

M.D. (Social & Preventive Medicine)/Com-
munity Medicine

M.D. (Medicine) with D.P.H.

Training/Research Experience

Requisite recognised postgraduate qualifi-
cation in the Subject.

II-Desirable

Published Research Work in the speciality

Note : Selected person will have to work and
reside at the Rural Health Training Centre
of the Department at Jawan about 15 Kms
from the Medical College.

20. Lady Medical Officer, Department of Com-
munity Medicine

Scale of Pay : 2200-4000 plus allowances

Qualification-I-Essential :

M.B.B.S from a recognised University.

II. Desirable :

D.G.O with three years experience as a
Registrar.

21 Medical Officer (Pathologist), J.N. Medi-
cal College Hospital.

Scale of Pay : 2200-4000 plus allowances

Qualifications-I-Essential :

(i) M.B.B.S.

(ii) Postgraduate Degree or Diploma in Pathol-
ogy.

(iii) Three years experience in the relevant field
in a recognised teaching Hospital of which
one year as a Resident Pathologist or
equivalent.

22. Medical Officer (Blood Bank), J.N. Medi-
cal College Hospital.

Scale of Pay : 2200-4000 plus allowances

Qualifications-I-Essential :

(i) M.B.B.S

(ii) P.G. Degree or Diploma in Pathology

(iii) Three years experience as Blood Transfu-
sion Officer in a recognised Hospital or
three years experience of working in Blood
Bank of a teaching hospital.

OR

(i) M.B.B.S.

(ii) Five years experience as Blood Transfusion

Officer in a recognised Hospital/teaching hospital.

II-Desirable :

Special training in practice of Blood Transfusion from a recognised Institution

D. Ahmadi School for the Blind

23. Principal, Ahmadi School for the Blind

Scale of Pay : Rs. 3000-4500 plus allowances

Qualifications-I-Essential :

1) Master's degree with atleast 55% marks

2) A degree/Diploma in Teaching/Education

3) Atleast 8 years Educational experience.

Five years as teaching experience at Secondary level/Higher level in a recognised institution and 3 years experience in Educational Administration

OR

At least 10 years teaching experience as Postgraduate teacher in a recognised school.

II-Desirable :

1) Working knowledge of Urdu, Hindi and English Braille

2) A Diploma in special Education for teaching of the physically handicapped

3) Experience in Organising Games & Sports and Co-curricular activities

E—Career Planning Centre

24 COUNSELLOR (Temporary), Career Planning Centre, Women's College

Scale of Pay : Rs. 2200-4000 plus allowances

Qualifications-I-Essential :

At least M.Phil. degree in Psychology with consistently good academic record

II-Desirable :

(a) Experience of Career Planning Information dissemination arranging career talks and designing training programme.

(b) Extension experience of measuring aptitude, interest and personality

(c) Research experience in Career Guidance

(d) Diploma in Guidance and Counselling

Note : Preference will be given to Women Candidates.

Prescribed application forms with instructions may be had either

(a) Personally from the Reception Counter, Administrative Block, AMU on production of Cash receipt of Rs. 25/- issued by the Cash Section, Finance Office, A.M.U., Aligarh

OR

(b) By Post from the Assistant Registrar (Selection Committees), Aligarh Muslim University, Aligarh-202 002, by sending a written request (mentioning the post, Advertisement number and date) with a self addressed stamped Rs 4/- envelope of 9"x4" size and a Demand Draft/IPO for Rs. 25/- payable to the Finance Officer, Aligarh Muslim University, Aligarh-202 002. The cover

should be superscribed, on the top left with 'Request For Employment Form'.

General Note : For the posts at S. Nos. 12, 14, 16 & 24 those who have applied earlier need not apply again. They will be considered on the basis of their previous applications if found eligible. They may however send any additional information about their qualifications/experience etc for consideration if so desire.

Complete application form alongwith Cash receipt/Demand Draft/IPO for Rs. 125/- (non-refundable application fee) payable to the Finance Officer, AMU, Aligarh procured in the above manner may either be delivered person-

ally or sent by post, superscribing on the top left of the cover the post applied for, advertisement number and date, to the Assistant Registrar (Selection Committees), Aligarh Muslim University, Aligarh-202 002, so as to reach him by 15.09.1998.

IMPORTANT NOTE : Applications received late or without necessary supporting documents or not accompanied by full prescribed fee or not submitted in the prescribed form shall be rejected summarily. The scales of pay mentioned above are un-reviewed.

Prof. H.A.S. Jafri
REGISTRAR

PERIYAR MANIAMMAI COLLEGE OF TECHNOLOGY FOR WOMEN



Periyar Nagar, Vallam, Thanjavur-613 403



Tel : (04362) 66263, Fax : (04362) 66353 E-Mail:pmct@tanjore.tn.nic.in
(Approved by AICTE, Affiliated to Bharathidasan University and *Accredited by National Board of Accreditation)

Applications are called for the posts of Professors and Asst. Professors in the following disciplines within 15 days with necessary documents

Discipline	Professors	Asst. Professors
1 Architecture	—	2
2 Civil Engineering*	—	2
3. Computer Science & Engg *	2	3
4 Electronics & Communication Engg *	1	2
5 Master of Computer Applications	1	2
6 Mathematics	1	2

QUALIFICATIONS

Engineering & Architecture	Science & Humanities
Professors Doctoral Degree	Professors & Asst. Prof. Doctoral Degree
Asst. Prof. Master's Degree	

Experience as per AICTE norms

Scale of Pay : As per AICTE norms

OTHER PERKS

1. EPF, FPF, Gratuity, EDLI Facilities
2. Free Transport from neighbouring Town, Thanjavur
3. Subsidised Medical and other Facilities
4. Free Internal & External Faculty Improvement Programme (FIP)
5. Faculty with 2 to 5 years of experience in this college will be sponsored for Quality Improvement Programme (QIP)
6. Hostel facility for Women Faculty
7. Unrestricted access to the Computer Centre

** Preference will be given to women candidates. Retired persons age not exceeding 65 years may also apply. Salary is negotiable.

"QUALITY IN TOTO IS OUR MOTTO"

Prof. N. Ramachandran
Principal

G. Swasidurai M.A., B.L.,
Correspondent



INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR-721302, INDIA

Fax: 91 3222 55303
(Advertisement No. R/2/98)

Indian Institute of Technology, Kharagpur invites applications from Indian Nationals for the following positions :

Professor (Rs.5100-150-5700-200-7300)

Associate Professor (Rs.4500-150-5700-200-6300)

Assistant Professor (Rs.3700-125-4950-150-5700)

in the Departments/Centres of Aerospace Engineering, Agricultural and Food Engineering, Architecture and Regional Planning, Chemical Engineering, Chemistry, Civil Engineering, Computer Science and Engineering, Electrical Engineering, Electronics and Electrical Communications Engineering, Geology and Geophysics, Humanities and Social Sciences, Industrial Engineering and Management, Mathematics, Mechanical Engineering, Metallurgical and Materials Engineering, Mining Engineering, Ocean Engineering and Naval Architecture, Physics and Meteorology, Biotechnology, Cryogenic Engineering, Materials Science, Reliability Engineering, Rubber Technology, Rural Development, Continuing Education/Educational Technology, G S Sanyal School of Telecommunications and Vinod Gupta School of Management.

The pay scales will be revised soon. All the above positions carry allowances as per Institute rules.

Qualifications (for all positions) :

Ph.D with first-class academic record throughout in the appropriate branch.

Experience :

Professor . At least 10 years' teaching/research/industrial experience of which 5 years should be at the level of Assistant/Associate Professor

Associate Professor : At least 8 years' teaching/research/industrial experience of which 3 years should be at the level of Assistant Professor.

Assistant Professor . At least 3 years' teaching/research/industrial experience

Interested candidates may apply in the prescribed forms obtainable from Assistant Registrar (Recruitment) on request within **October 9, 1998** by sending an unstamped envelope (26 cm x 11 cm) indicating the Department. The fields of specialization and other relevant details will be supplied with the application form. The completed application form along with a crossed Demand Draft of Rs 100/- as application fee (non-refundable) drawn in favour of Indian Institute of Technology, Kharagpur and payable at State Bank of India, Kharagpur be sent to the Assistant Registrar (Recruitment), latest by **October 31, 1998**. SC/ST candidates are exempted from paying any application fee

Applicants from abroad may submit their applications in plain paper stating the date of birth, contact address, present position, the department to which the appointment is sought, position applied for, educational qualifications starting from Madhyamik/equivalent giving the percent of marks/grade, teaching experience, professional/industrial experience stating a responsibility associated with the job, a list of publications and reprints upto 5 of most significant publications and names and addresses of four distinguished persons who can act as referees. Application fee of US \$ 25.00 in favour of Indian Institute of Technology, Kharagpur should be sent along with the application to the Assistant Registrar (Recruitment) latest by **November 16, 1998**. For details one can visit us at : <http://www.iitkgp.ernet.in>

Qualifications and experiences, prescribed above, are only the minimum and mere possession of the same does not entitle to a candidate to be called for interview. The Scrutiny Committee at its discretion may call applicants for interview for a position lower than that applied for. The required minimum experience may be relaxed for meritorious candidates.



SAARC DOCUMENTATION CENTRE

HRD PROGRAMMES

SAARC Documentation Centre (SDC) is set up at INSDOC (CSIR). One of the objectives of SDC is Human Resource Development (HRD) in information management in the SAARC region. For this purpose, SDC conducts short-term courses, seminars, workshops, etc every year. Participants are drawn from all SAARC Nations. A few seats are reserved for India in each of the programmes.

Nominations are invited from Universities/Academic/Research Institutions for the following programmes in 1998. The nominations are to be sponsored by respective institutions.

1. Short Term Course on Information Technology for Information Management

No. of seats for India - 2

Duration - 5 weeks

Date - September 28 - October 30, 1998

2. Attachment Training Course

This is a personalised programme. The course schedule and the syllabus would be drawn after selection of the participants.

No. of seats for India - 1

Duration - 3 months

Date - September 28 - December 24, 1998

Target Group :

Working professionals engaged in library & information activities having basic knowledge of computers.

The nominees should enclose a brief resume with the following details :

Qualifications;

Age;

Experience; and

A small write-up on the usefulness of the programme for the individual as well as the sponsoring institution.

Venue :

INSDOC, New Delhi

SDC will bear the cost of training and local hospitality. Local hospitality includes :

- Accommodation, pick & drop transport
- A daily allowance of Rs. 300 per day to meet the cost of food and other expenses.
- Local sight seeing trip and sight seeing trip to a nearby place
- Local Travel, if any

To and fro travelling expenses will have to be borne by the sponsoring institutions.

Last date for Nominations :

September 14, 1998

Nominations may be forwarded to :

Mr. A. Subba Rao
Co-ordinator
SAARC Documentation Centre
c/o INSDOC
14 Satsang Vihar Marg
New Delhi-110 067
Telephone : 011-686 3609
Fax : 011-686 2228
E-mail : sdc@sirnetd.ernet.in